



India's Defence Budget and Armed Forces Modernisation: An Analysis

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Acronyms

ACCCS	Artillery Combat Command and Control System
ACDA	Arms Control and Disarmament Agency
ADC&RS	Air Defence Control & Reporting System
A&N	Andaman and Nicobar
AEW	Airborne Early Warning
AG	Adjutant General
AIFV	Armoured Infantry Fighting Vehicle
ALH	Advanced Light Helicopter
ANC	Andaman and Nicobar Command
ANURAG	Advanced Numerical Research and Analysis Group
AoB	Allocation of Business
AOC	Army Ordnance Corps
APC	Armoured Personnel Carrier
ARC	Administrative Reforms Commission
ARF	ASEAN Regional Forum
ARTRAC	Army Training Command
ASAT	Anti-Satellite Weapon
ASEAN	Association of Southeast Asian Nations
ASTROIDS	Army Strategic Operational Information Dissemination System
ASW	Anti-Submarine Warfare
ATM	Anti-Tank Missile
BEL	Bharat Electronics Ltd.
BRO	Border Roads Organisation
BSS	Battlefield Surveillance System
CAG	Comptroller and Auditor General
CDS	Chief of Defence Staff
CGE	Central Government Expenditure

CE	Capital Expenditure
CIDSS	Command Information Decision Support System
CII	Confederation of Indian Industry
CNS	Chief of Naval Staff
COFOG	United Nations Classification of the Functions of Government
CPI	Consumer Price Index
CSD	Cold Start Doctrine
DAC	Defence Acquisition Council
DAD	Defence Accounts Department
DDG	Demands for Grants
DDP	Department of Defence Production
DGMO	Director General Military Operations
DGQA	Directorate General of Quality Assurance
DPP	Defence Procurement Procedure
DPSUs	Defence Public Sector Undertakings
DRDO	Defence Research and Development Organisation
DSE	Defence Services Estimates
ECHS	Ex-Servicemen Contributory Health Scheme
EEZ	Exclusive Economic Zone
ELINT	Electronic Intelligence System
EU	European Union
EWS	Electronic Warfare System
FGFA	Fifth Generation Fighter Aircraft
F-INSAS	Future Infantry Soldier As a System
FMCT	Fissile Material Cut-off Treaty
FRBM	Fiscal Responsibility and Budget Management
FRBMA	Fiscal Responsibility and Budget Management Act
FYDP	Five Year Defence Plan
FYP	Five Year Plan

GDP	Gross Domestic Product
GNP	Gross National Product
GoI	Government of India
GWoT	Global War on Terror
HAL	Hindustan Aeronautics Ltd.
HDI	Human Development Index
HQs	Headquarters
IAF	Indian Air Force
ICG	Indian Coast Guard
IDS	Integrated Defence Staff
IDSA	Institute for Defence Studies and Analyses
IED	Improvised Explosive Devices
IISS	International Institute of Strategic Studies
IIT	Indian Institute of Technology
IMF	International Monetary Fund
ISRO	Indian Space Research Organisation
IT	Information Technology
J&K	Jammu and Kashmir
JAKLI	Jammu and Kashmir Light Infantry
KRC	Kargil Review Committee
LACM	Land-Attack Cruise Missiles
LAOs	Local Audit Officers
LCA	Light Combat Aircraft
LCH	Light Combat Helicopter
LCM	Landing Craft Mechanised
LoAC	Line of Actual Control
LoC	Line of Control
LPD	Landing Platform Dock
LTIPP	Long Term Integrated Perspective Plan
MBT	Main Battle Tank

MDL	Masagon Dock Ltd.
MEA	Ministry of External Affairs
MER	Market Exchange Rates
MES	Military Engineer Service
MHA	Ministry of Home Affairs
MIC	Military Industry Complex
MMRCA	Medium Multi-Role Combat Aircraft
MoD	Ministry of Defence
MoF	Ministry of Finance
MoS	Minister of State
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organisation
NBC	Nuclear, Biological and Chemical
NCC	National Cadet Corps
NCO	Network Centric Operations
NDA	National Democratic Alliance
NSA	National Security Advisor
NSAB	National Security Advisory Board
NSG	Nuclear Suppliers Group
OFs	Ordnance Factories
P&A	Pay and Allowances
PAC	Public Accounts Committee
PCDA	Principal Controller of Defence Accounts
PDS	Proactive Defence Strategy
PLA	People's Liberation Army (of China)
PM	Prime Minister
PPP	Purchasing Power Parity
PDS	Proactive Defence Strategy
PSUs	Public Sector Undertakings
RAPIDs	Reorganised Plains Infantry Divisions

R&D	Research & Development
RE	Revised Estimate
RE	Revenue Expenditure
RFI	Request for Information
RFP	Request for Proposal
RM	<i>Raksha Mantri</i> (Defence Minister)
RoA	Radius of Action
RMA	Revolution in Military Affairs
RR	Rashtriya Rifles
SAARC	South Asian Association for Regional Cooperation
SEZ	Special Economic Zone
SIPRI	Stockholm International Peace Research Institute
SRI	Self-Reliance Index
ToT	Transfer of Technology
TPCR	Technology Perspective Capability Roadmap
UAV	Unmanned Aerial Vehicle
WASO	Winter Air Surveillance Operations
WPI	Wholesale Price Index

Preface

The rate of increase in India's defence budget is threatening Pakistan's security. Conventional asymmetry between India and Pakistan provided the latter with the rationale for development of its nuclear weapons programme for defence purposes. This is the basic assumption and an implied consequence of emerging trends in India's defence spending as discussed in this monograph. Given the fundamentality of this issue to Pakistan's threat perception and defence preparations, it is ironic that an in-depth discussion on this subject has not been done in published sources. Pakistan's perspective in the academic domain is wanting which prompted IPRI to undertake this study.

The monograph argues that, regardless of the lacunas in Indian defence establishment, slippages, bureaucratic hurdles and decision-making problems, the gap between Indian and Pakistani defence budgets is consequential. India is the biggest country in South Asia and its defence budget is far more than that of its neighbours. Even though China has been cited to be a primary security threat by Indians on many occasions, approximately 70 per cent of its Armed Forces are deployed against Pakistan. This makes Pakistan by default the primary country against which Indian defence spending takes place.

The monograph has three sections. Section I provides the rationale and contextualises India's defence spending by looking at the country's economic growth over the years, Indo-China relationship, the Kargil Committee Report and inventory obsolescence. Section II discusses the emerging trends and patterns, including structure of the Indian defence budget. This section has many charts, graphs, and statistics. India does not share enough information on its defence spending publically to make accurate

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assessments, yet the data used here helps to outline major trends in its defence spending. A country's budget in itself cannot be threatening unless it's operationalised through defence preparations. The third major section of the study discusses how the defence equipment and doctrines have increased and evolved to solidify the effects of India's unchecked and burgeoning defence spending. In the last two decades, the country's defence outlook has completely revamped. All three services (Army, Navy and the Air Force) have launched new war doctrines, and this has also changed their defence equipment acquisition and deployment patterns.

The author reviews various budget heads to analyse how each one impacts the defence establishment differently. For example, the comparison between trends in capital budget and acquisition and investments has helped to highlight the prospective shape Indian defence forces may take in the foreseeable future.

I hope this study will be a new addition to the scarce literature on the subject and help scholars and researchers by providing diverse data from myriad sources in addition to the unique and objective analysis conducted. ■

Brig. (R) Sohail Tirmizi, SI(M)
Acting President, IPRI

Introduction

Introduction

With the 2000 economic boom, India's defence budget increased manifold. Interestingly, while this budget has continued to decrease as a percentage of the Gross Domestic Product (GDP), it has remained a somewhat constant percentage of its total Union Government expenditure. There is no indication of fiscal pressures created as a result of its military expenditure. Nevertheless, being a developing country, the opportunity cost of India's defence budget is very high.

Theoretically, military allocations are aimed at meeting security challenges and maintaining forces and capabilities to cater to envisaged threats. However, they are also aimed at establishing a strong military force to influence regional and extra regional countries and pursue national interests abroad. After China, which is not strictly a South Asian state, India is the biggest nation in its neighbourhood in terms of economic growth and military capabilities. It is the seventh largest defence spender in the world, with the geographic advantage of having physical boundaries with all South Asian countries, while none of them share boundaries with each other.¹ It has border disputes with almost all its neighbours.

Both Pakistan and China are identified as the primary source of concern by India's defence establishment. It has fought four wars with Pakistan since the Partition in 1947 and one border war with China. Today, India's defence budget is three times bigger than that of Pakistan. The doctrinal and equipment modernisation of its forces are identified by Pakistan as a source of regional strategic instability, and the latter's nuclear capability aims to deter both nuclear and conventional threats from India. The rapidly growing military capability of India is likely to weaken the conventional deterrent of Pakistan, leading the latter to lower its nuclear threshold.²

Arguably, India maintains conventional superiority over Pakistan in military terms and also vis-à-vis its immediate neighbourhood and its huge defence budget is aimed at offsetting China's military advantage.

China is developing military infrastructure in the border regions with India and is also becoming increasingly assertive in the Indian Ocean Region (IOR). However, 'two-thirds of India's military strength is deployed against

¹ Only Afghanistan, a recent entrant of the *South Asian Association for Regional Cooperation* (SAARC), does not share a boundary with India.

² Zulfqar Khan and Ahmad Khan, "The Strategic Impasse over India's Doctrinal Restructuring," *The Washington Quarterly* 39, no.1 (2016): 139-157.

Pakistan, even though it hardly possesses any conventional military *threat* to India.³ The analysis conducted in this study supports the argument that India has not shifted its major budgetary allocations and its military posture towards catering its threat perception from China.

Section I primarily discusses emerging trends in India's military budget, its various facets and comparison with global military spenders. The remarkable growth in India's defence budget can be attributed to economic growth, obsolete military inventory, demand for structural reforms in procurement and policy as well as glorified aims of regional power projection and becoming an important global actor. Resource allocation, as an important metric of India's political will for militarization, has been analysed in this section. The analysis of military budgets and emerging trends is difficult due to many structural and methodological reasons. First, there is the problem of having a universal definition of what constitutes military expenditure. Lack of transparency is a close second. Both transparency and absence of methodology make the data on military expenditures less reliable. However, different reputable data collectors on military budgets have devised ways to compensate or downplay the problems associated with lack of transparency. This section also provides the context and methodology for this study. It highlights the difference between definitions of defence budget employed by the Stockholm International Peace Research Institute (SIPRI), United Nations (UN), North Atlantic Treaty Organisation (NATO) and that of the Indian government. Most of the data in this study has been taken from official Indian government sources like the Ministry of Defence (MoD), Ministry of Finance (MoF), and Union budget documents etc. Standardisation of data was not required since this study is not about comparative analysis between different states.

In Section II, the structure of the budget and definitions of various budget heads as they have been used in the government sources has been discussed. India's defence budget is mainly divided into two categories: Capital Budget (for force modernisation and longtime investments), and Revenue Expenditure (mainly for day-to-day expenses and for operational readiness). The trajectories and emerging trends in these two heads have also been analysed.

³ Balaji Chandramohan, "India's Defence Budget, Strategic Orientation and Military Modernisation" (paper, Future Directions International, Nedlands, 2014), http://futuredirections.org.au/wp-content/uploads/2014/08/Indias_Defence_Budget_Strategic_Orientation_and_Military_Modernisation_.pdf.

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Section III discusses the modernisation programmes of the tri-services. A doctrinal shift came in the Indian Army, Navy and Air Force during the 1990s. This shift was influenced by the nuclearisation of South Asia and transformations in military affairs happening elsewhere. The phasing out of obsolete technologies/equipment and modernising arsenal is helping operationalise this doctrinal shift. India of today is much more assertive than India of the 1990s, and this change is being backed by increasing military capability. This section discusses evolution of new doctrines and explores how modernisation programmes co-relate with India's evolving military doctrines.

Section I - Context

Section I: Context

External security threats, inventory obsolescence, improving economy and doctrinal evolution are the main drivers behind India's increasing defence expenditures. The Kargil conflict in 1999 also became a catalyst for the modernisation drive. In this regard, the Kargil Review Committee was constituted by the Indian government in 1999 that highlighted weaknesses in the defence sector and provided recommendations for improvement in all aspects of India's defence policy and practice.¹

Economic Growth

The implications of defence expenditure are bi-directional. The overwhelming literature on economic costs of defence expenditures does not provide uniform results.² It is argued that given the low Gross Domestic Product (GDP) percentage allocated for defence, India's economy is not unduly impacted by its defence spending. However, high poverty levels and other negative socioeconomic indicators highlight that the opportunity cost of defence can be very high for India. Since independence, India's economy has remained development oriented. Until 1962, India spent approximately 1.8 per cent of its GDP on defence, which was drastically increased to 3.5 per cent in 1964. According to SIPRI's military expenditure database, since 1988, India's defence budget has remained under 3 per cent of its GDP.³ However, due to rapid growth of its economy, the defence budget has risen sharply in nominal terms as compared to the 1980s.

As pointed out in the beginning, one of the key drivers of an increasing defence budget is India's economic development. Traditionally, India has never overburdened its economy with military expenses. It is argued that India even reduced its military expenditure to relieve pressures

¹ Nuclear Weapons Archive, *Kargil Review Committee Report*, accessed August 2016, <http://nuclearweaponarchive.org/India/KargilRCB.html>.

² Benjamin E. Goldsmith, "Bearing the Defence Burden, 1886-1989: Why Spend More?" *Journal of Conflict Resolution* 47, no. 5 (2003): 551-573, doi: 10.1177/002200270 3254297.

³ SIPRI, *Military Expenditure by Country as Percentage of Gross Domestic Product, 1988-2002* (Solna: Stockholm International Peace Research Institute, 2017), <https://www.sipri.org/sites/default/files/Milex-share-of-GDP.pdf>.

on its economy in the face of looming security threats.⁴ Since 1987, its defence budget decreased continuously as a percentage of GDP from 3.5 per cent to around 2 per cent even though the security make-up of South Asia changed completely for India with the threat of a *de facto* nuclear Pakistan.⁵ The widening fiscal deficit in the 1990s constrained its military budget and modernisation programmes despite the uncertain strategic scenario and collapse of the Soviet Union. This is a recurring pattern of defence spending even today, where some sections of the defence budget are susceptible to cuts depending on India's fiscal deficit situation. The section on political will discusses this in detail.

An improving economy with a GDP growth rate averaging 7-8 per cent per annum enabled India to be taken more seriously as a major player in the international arena. This helped India to practically diversify its strategic goals in line with its historical aspirations of emerging as a major global player. Naval expansion and modernisation is the most prominent manifestation of this. India is investing heavily in long-range power projection systems instead of land-based conventional systems. Irrespective of its Cold Start Doctrine (CSD), most of the new acquisitions are aimed mainly at achieving a decisive advantage over Pakistan and as a credible deterrent against China.

Pakistan and internal insurgents groups are the immediate concerns of India's defence establishment. China is considered more of a strategic competitor in the long term, even though a humiliating defeat at the hands of China in 1962 is treated as a trauma in the strategic memory of India. The latter mobilised around 200,000 troops in the strategic valley of Tawang in 1986 after the Sumdorong Chu incident. This, however, did not replace Pakistan as the main concern of the India's military establishment since the Indian Army's only major goal is to plan and engage in war against Pakistan. Approximately 80 per cent of the Indian Army is deployed on its western borders with Pakistan. Post-1971, India has had a policy of maintaining a sizeable conventional edge over Pakistan mostly in quantitative terms, which has created a security dilemma for the latter. Pakistan's response has rested on acquiring comparatively advanced technologies from the West, reliance on the doctrine of Offensive Defence

⁴ Ajai K. Rai, "Defence Budget 2000-01: Some Observations," *Strategic Analysis* 24 no. 3 (2000): 841-845, doi:10.1080/09700160008455253.

⁵ IDSA, *Asian Strategic Review: 1994-95* (New Delhi: Institute for Defence Studies and Analyses, 1995), 59.

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and taking advantage of its lean geographic shape for prompt mobilisation. Pakistan's qualitative advantage in 1990s was termed as 'too successful' by prominent Indian security studies scholar Sumit Ganguly, as it contributed to India's threat perceptions, regardless of its quantitative superiority over Pakistan.⁶

Interestingly, India has the highest defence budget in South Asia. Both the size of its Armed Forces and defence budget are three times the size of Pakistan, and it overshadows the latter in terms of nuclear and space technology. Pakistan blames India for disturbing the conventional security balance in South Asia given the qualitative and quantitative improvements in its military capability; and pushing Pakistan towards its nuclear doctrine of full spectrum deterrence. Nevertheless, Indian reactions after the 2008 Mumbai attacks demonstrated that India's conventional superiority did not provide it with any credible options against Pakistan except for resorting to rhetoric and blame shifting.⁷ This study demonstrates that the capability matrix of India's tri-services has changed since 2008 which is likely to impact any future Indo-Pak conflict.

Indo-China Relationship

India's relationship with China is characterised by both cooperation and competition. China has gradually become India's biggest trade partner with an annual trade of approximately INR 3566 billion (USD 54 billion).⁸ This figure was just USD 1.8 billion in 1997 and 7 billion in 2004 and 35 billion in 2008.⁹ However, the security concerns of India vis-à-vis China have not waned despite rising economic interdependence of the two countries. Nevertheless, the security concerns of India about China are of relatively different nature than those vis-à-vis Pakistan. India and China are competing to gain regional influence. India views China's

⁶ Sumit Ganguly, Rahul Mukherji and Rajesh Rajagopalan, "India and South Asian Security," *Defense and Peace Economics* 10, no.4 (1999): 335-345, doi:10.1080/10430719908404931.

⁷ Shashank Joshi, "India's Military Instrument: A Doctrine Stillborn," *Journal of Strategic Studies* 36, no. 4 (2013): 31-41, doi:10.1080/01402390.2013.766598.

⁸ Ministry of Commerce and Industry, GoI, "Trade Statistics" (Government of India, n.d.); Ministry of Commerce and Industry, GoI, "Trade Statistics for Imports" (Government of India, n.d.); Ministry of Commerce and Industry, GoI, "Trade Statistics for Exports" (Government of India, n.d.).

⁹ "China Emerges as India's Top Trading Partner: Study," *Times of India*, March 2, 2014, <http://timesofindia.indiatimes.com/business/india-business/China-emerges-as-Indias-top-trading-partner-Study/articleshow/31268526.cms>.

strategic partnership with Pakistan as a means to encircle India. In terms of military transfers, China is Pakistan's biggest partner. This is viewed as an effort to erode India's conventional superiority over Pakistan. Both China and India are locked in a vehement competition to gain influence over SAARC countries for economic and strategic purposes.¹⁰ Expansion plans of the Indian Navy and development of a new Naval command at Port Blair are thought to be a response to China's growing relations with the littoral Asia-Pacific and South Asian countries like Bangladesh, Myanmar and Sri Lanka. People's Liberation Army (PLA) modernisation and assertiveness coupled with infrastructural development of the bordering regions and minor border skirmishes have led India to raise a new mountain strike corps. Completion of the new corps is dependent on sufficient funding in the coming years.

A generally held view of the India observers concedes to the analysis provided above. However, lately India has also been very vocal of the immediate security threats it faces from China. The context for this heightened threat perception is not clear in the literature consulted, however, it is clear that it is based on worst-case scenario assumptions.¹¹ This can have serious consequences of destabilising the strategic balance in South Asia. Preparation for a two-front war automatically alters the force balance between India and Pakistan, leaving the latter feeling insecure with its existing conventional capability, increasing its reliance on nuclear weapons for defence and driving the two states towards a conventional arms race.

Kargil Committee Report

The Kargil Committee was constituted to assimilate the weaknesses of the defence establishment that led to the Kargil Crisis and recommend policy options to improve India's operational preparedness. The Committee held over a hundred meetings with senior members of the government, bureaucracy, and media persons and presented its report in February 2000.

¹⁰ Jonathan Holslag, "The Persistent Military Security Dilemma between China and India," *Journal of Strategic Studies* 32, no. 6 (2009): 811-840, doi: 10.1080/014023 90903189592.

¹¹ Ali Ahmed, "Ongoing Revision of Indian Army Doctrine" (comment, Institute for Defence Studies and Analysis, New Delhi, January 6, 2010), http://www.idsa.in/idsacomments/OngoingRevisionofIndianArmyDoctrine_aahmed_060110.

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The main findings of the Committee pointed out that the infiltrations from the Pakistani side came as a total surprise to the Army. The current and previous Armed Forces leadership unanimously thought that logistically any Pakistani operation in the Kargil heights was unsustainable, thus, it would be foolish to conduct a mass scale operation in this area. The Indian threat perception was limited to having heavy artillery exchange from across the Line of Control (LoC) and limited infiltration of *mujahideen* (those engaged in *jihād* or holy war). In terms of modernisation, the Committee's emphasis was mainly on modernising the infantry and intelligence networks. The Indian military conducted Winter Air Surveillance Operations (WASO) regularly, but they were not aimed at detecting massive infiltration of military regulars, thus, it conducted surveillance only in the valleys and not on the ridges. It was recommended that India should develop modern surveillance capabilities especially through space imagery. Induction of Unmanned Aerial Vehicles (UAVs) in sectors other than plains was also recommended as imperative. It was suggested that a more stable platform other than the Cheetah helicopters should be used for WASO. Any helicopter-based surveillance system should be equipped with thermal sensors. In a nutshell, the electronic intelligence sector was found to be weak and needed to be developed. According to Committee findings, intelligence gathering efforts also needed to be streamlined. It was highlighted that at the organisational level various intelligence gathering divisions should be integrated under an integrated defence intelligence agency.

The Committee found that infantry soldiers were under a lot of pressure due to lack of suitable equipment, weapons and even clothing. Due to slow modernisation, battlefield efficiency and firepower was suffering. For example, they noted that even though the new light rifles (5.56 mm INSAS) had been authorised, most troops were still waiting to be equipped with them. Also, the paramilitary forces in Kashmir were very heavily reliant on the Army for counterinsurgency operations, which the Committee concluded, was affecting the operational preparedness of the Army. Thus, it recommended development of a long-term counterinsurgency policy to relieve the Army of its counterinsurgency role. Successive Indian Chiefs of Army Staff (COAS) and Director Generals of Military Operations (DGMO) were of the opinion that due to commitments in Sri Lanka, subsequent deployments in Punjab, the North

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East and Kashmir, and reduction in defence expenditures, India's assumed conventional superiority over Pakistan was eroding.

The Committee also suggested technologically modernising the Army and cutting down its numerical strength. It was felt that insurgents in Kashmir had out-gunned the security forces. The helicopters used for surveillance did not have sophisticated monitoring sensors. It was only after Kargil that direction-finding equipment was procured. The general sense of the report was that the Pakistan Army was technologically much better equipped, while Indian procurements were bogged down sometimes due to conflicting policies of indigenisation of technology. The Committee recommended that the choice between 'make or buy' should not come at the price of combat readiness of Indian forces. It was also observed that the security management framework was developed by Lord Mountbatten and Lord Ismay and does not complement the actual security needs of India vis-à-vis the regional environment. However, in the last five decades political leadership and civil military leadership had become stakeholders in the *status quo* rather than developing a better system according to national needs.

Inventory Obsolescence

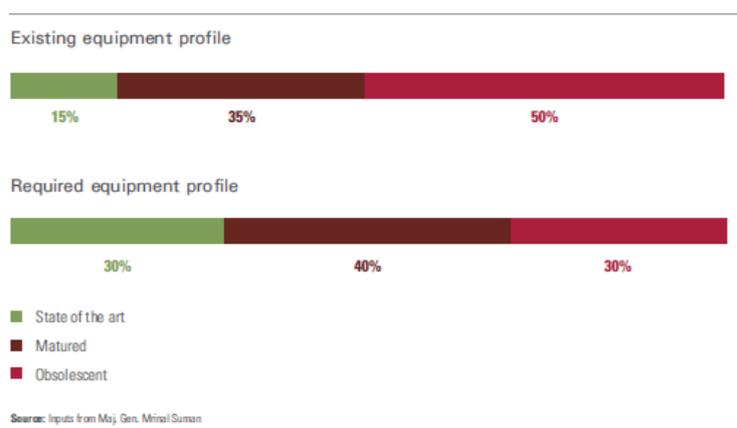
India has increased its capital budget threefold since 2005. This has helped India become the leading importer of military equipment in the world for the last several years. Inter-alia, obsolete defence equipment and absence of indigenous development and manufacturing capability are two key drivers of India's extensive military shopping spree. A report published by the KPMG in 2014 highlighted the inadequacy of defence manufacturing capability in India which has the indigenous capability to produce only 30 per cent of its military hardware, while the rest is procured through imports. The private sector's participation is nominal and most of the military equipment/ weapons are manufactured by ordnance factories or other Defence Public Sector Undertakings (DPSUs).¹² The ratio of obsolete weaponry of India was very high in the late 1990s and early 2000s. The KPMG report highlighted that only 15 per

¹² KPMG, *Union Budget 2014: Defence Post Budget Sectoral Point of View*, report (Mumbai: Klynveld Peat Marwick Goerdeler, 2014), <https://www.kpmg.com/IN/en/services/Tax/unionbudget2014/Documents/KPMG-Defence-PoV-2014.pdf>.

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cent of the military equipment of the Indian forces could be termed as 'state of the art' (Figure 1):

Figure-1
Percentage of Obsolete Inventory



Source: KPMG, *Opportunities in the Indian Defence Sector: An Overview*, report (Mumbai: Klynveld Peat Marwick Goerdeler, 2010), <https://www.kpmg.com/ca/en/industry/industrialmarkets/documents/opportunities%20in%20the%20indian%20defence%20sector.pdf>. Also quoted in Harsh V. Pant, ed., *Handbook of Indian Defence Policy: Themes, Structures and Doctrines* (New York: Routledge, 2016), 4-14.

India is criticised for not investing in technologies that are of immediate need to its forces.¹³ This may have also contributed to obsolescence of its arsenal and low operational preparedness. India's current defence acquisition is considered more political oriented than strategic, and does not strictly correlate with its Armed Forces' doctrines or strategic goals.¹⁴ For example, in the case of acquisition of aircrafts, India has increased its dependence on foreign suppliers' provision of spare parts and enhanced pressure on its military preparedness. In the 1990s,

¹³ Stephen P. Cohen and Sunil Dasgupta, *Arming without Aiming: India's Military Militarization* (Washington, D.C.: Brookings Press, 2010), 53-96, https://www.brookings.edu/wp-content/uploads/2012/04/0907_arming_without_aiming_powerpoint.pdf.

¹⁴ Harsh V. Pant, "Indian Defence Policy at a Crossroads," *Asia-Pacific Review* 17, no.1 (2010): 124-144, doi: 10.1080/13439006.2010.482759; Joshi, "India's Military Instrument: A Doctrine Stillborn."

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flying hours of the IAF plunged and it resorted to cannibalisation to keep its squadrons of MiGs operational.

In the mid-2000s, the Indian Army assessed that its 'combat ratio' vis-à-vis Pakistan had fallen to 1.22:1. The combat ratio is a capability metric used by India to define its military edge over Pakistan. India maintained a combat ratio of 1.75:1 in the mid-1970s. In order to increase its combat advantage over Pakistan, the Indian Army desires to acquire a wide range of equipment from modern artillery to electronic warfare equipment. To this end, the Army also lobbied with the MoD to get extra funds.¹⁵

¹⁵ International Institute for Strategic Studies, *The Military Balance*, 106, no. 1 (2006): 226.

Section II

**India's Defence Budget:
Emerging Trends and Patterns**

Section II

India's Defence Budget: Emerging Trends and Patterns

Everything that can be counted does not necessarily count. Everything that counts cannot necessarily be counted.

-Albert Einstein

Definitional Discrepancies

There are a number of international organisations that are involved in collecting and analysing international defence expenditure data. The UN receives information through the UN standardised instrument for reporting military expenditures framework, which it annually reports to the General Assembly.¹⁶ Also, the London-based International Institute for Strategic Studies (IISS) publishes an annual report titled *The Military Balance* which discusses international defence expenditures along with force levels, weapons, equipment and technology procurements and regional security analysis. SIPRI also publishes a yearbook analysing global military capabilities and defence economics. In addition to this, SIPRI also collects information on arms transfers. The Congressional Research Service (CRS) of United States publishes an annual report on international arms transfers. And lastly, the United Nations Register of Conventional Arms is also an important source to explore the declared arms deals and transfers by different states.

Most of these organisations employ the same methodology and definitions as NATO, revised in 2004, and also loosely use the United Nations Classification of the Functions of Government (COFOG) for guidance.¹⁷ The NATO definition of military expenditure is:

¹⁶ UNODA, *United Nations Report on Military Expenditures*, report (New York: United Nations Office for Disarmament Affairs, n.d.), accessed March 2016, <http://www.un-arm.org/MilEx/Background.aspx>.

¹⁷ United Nations Statistics Division, "Detailed Structure and Explanatory Notes: COFOG Code 02.1.0," accessed March 2016, <http://unstats.un.org/unsd/cr/registry/regcs.asp?Cl=4&Lg=1&Co=02.1.0>.

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The cash outlays of central or federal government to meet the costs of national armed forces. The term armed forces include strategic land, air, naval, command, administration and support forces. It also includes other forces if they are trained, structured and equipped to support armed forces and are realistically deployable.¹⁸

The NATO definition includes government spending on:

....armed forces, including peacekeeping forces; defence ministries and other government agencies engaged in defence projects; paramilitary forces, when judged to be trained and equipped for military operations; and military space activities.¹⁹

It comprises of all current (revenue) and capital expenditure on civil and military personnel, with retirement pensions of military personnel and social services for personnel, operations and maintenance equipment, technology procurement and military research and development. However, it does not include the military aid in the defence expenditure of the country that spends it. This point however, is irrelevant for India as the Indian Union government is the only source of Indian defence expenditures. The NATO definition does not include civil defence and current expenditure for activities of previous military utility, such as for veterans' benefits, demobilisation, conversion and weapons dismantlement. Among others, NATO's definition of military expenditure is used by SIPRI, IISS, the International Monetary Fund (IMF), World Bank and relevant UN bodies/organisations.

The COFOG classifies expenses related to administration of military defence affairs and services as defence expenditure. It includes expenses incurred on the operations of land, sea, air and space forces and capabilities, other auxiliary services like engineering, transportation, intelligence, communication, maintenance and non-combatant support personnel of the defence establishment.

Despite efforts made by the UN and NATO to develop a standardised format and definition of defence budgets, different countries use different definitions, criteria and budget heads for defence

¹⁸ IISS, *The Military Balance* 110, no. 1(2010): 12.

¹⁹ World Bank, "Data on Military Expenditure (% of GDP)," accessed August 2016, <http://data.worldbank.org/indicator/MS.MIL.XPND.GD.SS>.

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expenditures. There is a discrepancy in the defence budget data provided by SIPRI, *Military Balance* by IISS and India's official defence budget which can be attributed to the different definition of defence expenditure used by the Indian government. The official Indian budget statements provided to the IMF do not include expenditure on paramilitary forces, whose total strength is approximately a million. Both India and Pakistan do not include military pensions or social service for the MoD personnel in their official figures. This gives an understated view of the total defence spending of each country.²⁰

There are numerous problems with defence data including lack of availability of information, problems of divergent definitions and credibility of available information in open sources. Internationally, there is also increasing evidence that significant amounts of defence expenditure are not covered in the audits and accounts of developing countries. This may be simply a result of the different national legal requirements or attempts to hide the actual figures using mechanisms such as double book-keeping, extra budgetary accounts, highly aggregated budget categories, military assistance, and foreign exchange manipulation.²¹ A study was conducted by Thomas Scheets in 1991 to demonstrate the extent to which official figures may differ from the actual expenditures. Additionally, the data provided by different data sources, SIPRI, Arms Control and Disarmament Agency (ACDA), IISS, IMF and World Bank, sometimes provide significantly different numbers. The problem with these databases is not of reliability entirely, but differences in methodology of data collection which is not publically available for analysis in order to see what factors led to variation in the figures. One extreme case was that of Argentina's defence budget in 1982, where the

²⁰ Shuja Nawaz and Mohan Guruswamy, "India and Pakistan: The Opportunity Cost of Conflict" (Washington, D.C.: Atlantic Council, 2014), http://www.atlanticcouncil.org/images/publications/India_and_Pakistan_Opportunity_Cost_of_Conflict_web.pdf.

²¹ Nicole Ball, *Third World Security Expenditure: A Statistical Compendium*, report (Stockholm: Swedish National Defence Research Institute, 1984). Also, J. Paul Dunne, Sam Perlo-Freeman and Aylin Soydan, "Military Expenditure and Debt in South America," *Defence and Peace Economics* 15, no. 2 (2004): 173-187, doi: 10.1080/1024269032000110540.

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IISS military expenditure figure and that published by the IMF differed by 1034%.²²

Notwithstanding this stated inconsistency, this study has used the official defence spending figures provided by the Indian government for two reasons: 1) there is not a lot of data available other than the governmental documents that provide a clearer and more extensive breakdown of India's defence budget; 2) the purpose of this study is to analyse the implications of an increasing defence budget for military modernisation of India. Military modernisation budget is effectively covered under the capital budget head. Also, regardless of the rudimentary industrial, and Research and Development infrastructure in the defence sector, the budgetary outlays also include the expenditures for DRDO and ordnance factories. These two organisations if working efficiently in line with their envisaged goals could also have implications for military modernisation. One additional advantage of using official government figures is that it provides a more nuanced understanding of the increasing defence allocations by India.

Nuclear, missile and space capabilities are not accounted for in the defence budget and are covered under separate heads. However, to practically limit the scope of the study to conventional capabilities, it was pertinent to analyse the official defence budget separately.

Structure of the Defence Budget

India's defence budget is presented annually to the *Lok Sabha* (House of the People)²³ in March-April. Each financial year, eight demands for grants are presented to the *Lok Sabha* related to defence and paramilitary forces for voting:

Six of these cover the budgetary requirements for the Defence Services also known as Defence Budget.

1. Demand No. 22, Defence Services – Army (including NCC²⁴, Sainik Schools & DGQA²⁵, Rastriya Rifles, Military Farms and ECHS).

²² J. Paul Dunne, "The Economic Effects of Military Expenditure in Developing Countries" (paper, Economics Group, Middlesex University Business School, London, 2000), <http://carecon.org.uk/Chula/MILLDCSnew.pdf>.

²³ Editor's Note: Lower house of India's bicameral Parliament.

²⁴ National Cadet Corps.

²⁵ Department of Defence Production.

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2. Demand No. 23, Defence Services – Navy (including Joint Staff)
3. Demand No. 24, Defence Services – Air Force
4. Demand No. 25, Defence Ordnance Factories
5. Demand No. 26, Defence Services – Research & Development
6. Demand No. 27, Capital Outlay on Defence Services, includes all services and departments other than those covered by the Demands for Grants of MoD (Civil).²⁶

The official Defence budget does not include Jammu & Kashmir Light Infantry, Defence Accounts Department, civil expenditure of the Ministry of Defence Secretariat, Coast Guard Organisation, Canteen Stores Department, and Defence Estates Organisation, paramilitary forces, and defence pensions. There are two separate Civil Demands for Grants of the Ministry of Defence that provides funding for these - No. 20, Ministry of Defence (Civil) and Demand; and No. 21, Defence Pensions. In addition to this, the Ministry of Road Transport & Highways provides for the expenses of the Border Roads Organisation.

Demand Grants No 22-26 cover the overall operating costs of the three services and other departments. An allocation made through this criterion is mentioned under the budgetary head of 'Revenue Expenditures' in all official budgetary documents and audit reports:

The Revenue expenditure includes expenditure on Pay & Allowances, Transportation, Revenue Stores (like Ordnance stores, supplies by Ordnance Factories, Rations, Petrol, Oil and Lubricants, Spares, etc.), Revenue Works (which include maintenance of Buildings, water and electricity charges, rents, rates and taxes, etc.) and other miscellaneous expenditure.²⁷

Funding related to military modernisation and building or acquisition of durable assets and technologies for all services and departments covered by the Demand for Grants 22-26 is provided in the Demands for Grants 27. An allocation made through this criterion is

²⁶ National Academy of Audit and Accounts, GoI, "Financial Aspects and Budgetary Management," presentation (Government of India, 2015), naaa.gov.in/wp-content/uploads/2015/10/IAA-presentation.ppt.

²⁷ Ministry of Defence, GoI, *Standing Committee on Defence, 15th Lok Sabha, Demands for Grants (2010-2011)*, ninth report (Government of India, 2010).

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mentioned under the budgetary head of ‘Capital Expenditure’ in all official budgetary documents and audit reports. The capital expenditures on civil Demands for Grants 20-21 of the MoD are not covered under this budgetary head:

The Capital expenditure includes expenditure on the acquisition of Land, Construction Works, Plant and Machinery, Equipment, Tanks, Naval Vessels, Aircraft and Aero-engines, Dockyards, etc.²⁸

The Defence Accounts Department revised the Classification Hand Book (CHB) in 2010, based on the structure of Budget and Accounts accepted by the Comptroller and Auditor General of India. It is the basic document for accounting of transactions on behalf of Defence Services. There are five major heads for revenue receipts, Army, Navy, Air Force, Ordnance Factories and DRDO. There is no subhead for capital outlays on the receipts side. On the expenditure side the capital outlays are included in addition to the aforementioned five major heads.²⁹

For the three services, a major portion of the revenue budget provides funds for personnel salaries. The rest of the budget provides Transportation, Stores, Works and Other Expenditure. ‘Transportation’ includes costs incurred for transfer and transport of personnel as well as major platforms like submarines, tanks, aircrafts etc. ‘Stores’ caters for the procurement of small inventory items, spares, electrical equipment, fuel and other lubricants, dockyard equipment, training equipment, armament and weapons equipment, clothing and accommodation etc. ‘Works’ include maintenance of buildings and infrastructure, amenities, personnel abroad, foreign trainers etc. Finally, ‘Other Equipment’ includes respective services headquarters, training of civilians, maintenance of airfields, naval bases, dockyards, stationery etc.³⁰ Furthermore, the

²⁸ Ibid.

²⁹ Ministry of Finance, GoI, “Statement I-Consolidated Fund of India, Revenue Account, Receipts” (Government of India, 2017), <http://indiabudget.nic.in/ub2017-18/afs/afs1.pdf>; Ministry of Finance, GoI, “Union Budget 2017-2018” (Government of India, n.d.), <http://indiabudget.nic.in/>; Ministry of Finance, GoI, “Statement I-Consolidated Fund of India, Capital Account, Disbursements” (Government of India, 2017), <http://indiabudget.nic.in/ub2017-18/afs/afs4.pdf>.

³⁰ Controller General of Defence Accounts, Ministry of Defence, GoI, *Classification Handbook of Defence Service* (Government of India, 2010), http://cgda.nic.in/accounts/code_heads/CHB-Latest.pdf; Controller General of Defence

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revenue budget also includes the expenditure on the Ex-servicemen Contributory Health Scheme (ECHS), *Rashtriya Rifles* (National Rifles)³¹ and military farms.³²

The 'Budget Estimate' is actually the amount allocated to a ministry, fund or scheme in the budget papers for a given year. During a financial year, some ministries spend more than appropriated and might require more funds than were actually allocated to them under the 'Budget Estimates'. The government through the Parliament's approval allocates 'supplementary' budget in the monsoon or winter session, under the 'Revised Estimates' category for a given financial year. 'Actual Expenditures' are the closing expenses of a ministry or department varying upward or downward of the Budget Estimates and the Revised Estimates. Actual Expenditures for the previous years are presented in the budget papers only post-2009.³³

India's defence budget is prepared through incrementalism. Lately, however, there has been a lot of debate to have an Outcome Budget instead. Many ministries in India have been asked by the Finance Ministry to adopt this, but the MoD is under no such obligation so far:

Incremental budgeting is the conventional budgeting method according to which the budget is organised by using previous year's expenses and/or actual performance as a base, with incremental amounts then added for the following year. The incremental amounts are adjusted for macroeconomic factors like inflation, or planned increases in sales prices and costs etc.³⁴

Accounts, Ministry of Defence, GoI, *Classification Handbook: Defence Services, Receipts & Charges* (Government of India, 2014),

http://cgda.nic.in/accounts/code_heads/CLASSIFICATION%20HANDBOOK_2014.pdf.

³¹ Editor's Note: The RR is a branch of the Indian Army under the authority of the Ministry of Defence. It is a counterinsurgency force made up of soldiers deputed from other parts of the Indian Army.

³² Ministry of Defence, GoI, "Notes on Demands for Grants, 2016-2017" (Government of India, 2016), <http://www.indiabudget.nic.in/ub2016-17/eb/sbe20.pdf>.

³³ Avinash Celestine, "How to Read the Union Budget" (New Delhi: PRS Legislative Research, 2010), http://www.prsindia.org/administrator/uploads/general/1266553625_Reading%20the%20budget-final.pdf.

³⁴ Comparing Budgeting Techniques, *accaglobal.com*, last modified June 19, 2017, <http://www.accaglobal.com/ie/en/student/exam-support-resources/fundamentals-exams-study-resources/f5/technical-articles/comparing-budgeting-techniques.html>.

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Generally, each department's administrative branch puts up 15-20 per cent increase over the previous years' allocation in the Demand for Grants and submits it to the Finance Ministry in the form of a Statement of Estimates. It contains the following details:

- a. Actual figures for the last 3 years,
- b. Sanctioned budget estimate for the current year,
- c. Actuals of the current year upto that point of time,
- d. Actuals for the corresponding period of the previous year,
- e. Revised estimate for the current year, and
- f. Proposed estimate for the next financial year.³⁵

The Ministry trims the amount demanded and allocates an amount higher than previous year's allocations and lower than the Demand for Grants.³⁶

To ensure structural and functional efficiency, an optimal Tooth-to-Tail Ratio (TTR)³⁷ should be maintained. This roughly translates into having a balance between acquisition of new weapons and platforms, and their maintenance for operational preparedness. For this, India's defence budget has two main components, namely 'Capital Expenditure' and 'Revenue Expenditure'. Spending on the creation of assets or reduction of liabilities e.g. building a road, or paying back a loan or investing in long-term usable equipment like submarines, tanks, artillery aircrafts etc. are bracketed as 'Capital Expenditures'. While spending on administrative costs or salaries etc. is termed as 'Revenue Expenditure'. There are two additional classifications used to express budgetary allocations in general – 'Plan Expenditure' and 'Non-plan Expenditure'. 'Plan Expenditure' is the government spending on schemes and projects covered by the five-year Plans which specify the programmes *that different ministries* will fund and develop over the next five years. The Planning Commission develops the five-year plan. The current Plan is 12th and runs from 2012-17. Plan Expenditures have capital and revenue components. 'Non-plan

³⁵ Ministry of Defence, Controller of Defence Accounts Chennai, GoI, "Accounts Section Workshop" (Government of India, n.d.), <http://cdachennai.nic.in/manuals/studymaterial/accountsection.pdf>.

³⁶ Amiyar Kumar Ghosh, *India's Defence Budget and Expenditure Management in a Wider Context* (New Delhi: Lancer Publishers, 1996), 6.

³⁷ Editor's Note: T3R is a military term that refers to the amount of military personnel it takes to supply and support (tail) each combat soldier (tooth).

Expenditures' can be considered revenue expenditures of the government as it covers the running expenditure of the government. These include interest payments on government debt, expenditure on organs of the state such as the Parliament and the judiciary and even spending on the conservation of existing government establishments such as schools and hospitals. Non-plan expenditure also has revenue and capital components. Defence falls within the purview of 'Non-Plan Expenditure'.³⁸

Methods, Sources and Limitations of the Study

The data in this study has been collected through primary sources and official Indian government documents. It is supplemented by data from IDSA (Institute for Defence Studies and Analyses), IMF (International Monetary Fund), IISS (International Institute of Strategic Studies) and SIPRI (Stockholm International Peace Research Institute) etc. It is indicated in the study where a secondary resource is used for analysing budget amounts. Since there is a discrepancy in data due to different methods and definitions used even by different departments within India, the figures only provide common trends but not necessarily an exact picture. Data provided in primary sources is also not uniform due to differences in definitions, methods of analysis and limitations in accurate data availability. For example, the Union budget documents and the reports by the CAG distinguish between revenue and capital outlays, while the annual reports of the Department of Defence provide total figures of budgetary estimates and actuals for the three services, DRDO and Ordnance Factories, which includes funding for all the demands for grants, without separately providing figures for revenue and capital expenditures. For the percentage of GDP, the annual figures published by the Planning Commission of India in its online databases have been used and to analyse the annual percentage of overall government expenditure allocated for defence, the union expenditure budget document has been used as a primary source.

This research measures the relationship between *Actual* defence expenditures with macroeconomic indicators and *Actual* union government expenditures of the budgeted years in retrospect, instead of looking at projections of all the three parameters at the beginning of each financial year as is commonly done in the general commentaries on

³⁸ Celestine, "How to Read the Union Budget."

defence budget. Most defence budget analysis by Indian sources use the latter methodology because these are conducted separately for each year to analyse the implications of each budgetary allocation for defence services. This is not a suitable method of measuring actual effects of an increasing defence budget. The timeseries analysis in the present study will provide a better picture of the progress on military modernisation and operational preparedness of the Indian defence forces in terms of budgetary allocations over a decade. However, actual expenditure numbers were only published after 2009 and data is unavailable in a few cases. In such instances, Revised Estimates are used instead and those are indicated in the study.

Since this paper is limited only to India and is not a military expenditure comparison between different states, standardisation of different categories/ budgetary heads has not been done. The budgetary figures mentioned in different sources use different numerical systems/power notation to express the amounts allocated or spent. For the convenience of analysis, these figures have been converted from 'crore' to billion. All amounts are expressed in Indian National Rupee, unless otherwise mentioned in United States Dollar (USD). Wherever a currency other than INR is mentioned, current and historical Market Exchange Rates (MERs) have been acquired from OANDA Corporation's website.

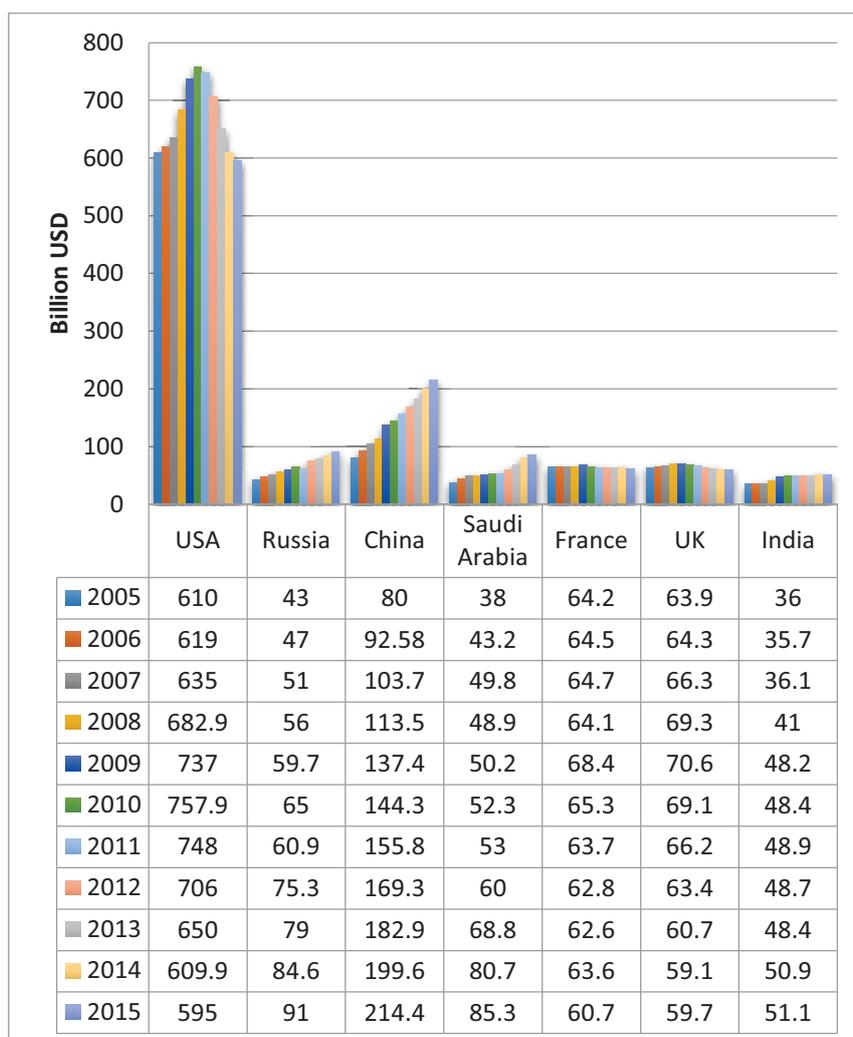
Using MERs instead of Purchasing Power Parity (PPP) exchange rates is also considered more reliable by SIPRI. It needs to be pointed out, however, that PPP rates are statistical estimations and prone to marginal errors. There is also limited utility in using the amount of budgetary allocation for defence to analyse military utility and effectiveness because they depend on various qualitative and quantitative factors such as prices, industrial efficiency, military organisation and doctrines and capacity for technological absorption etc.

The trends chalked out in the research have also not been adjusted for inflation nor is a military deflator used. However, each year's budget is incremental and rate of inflation is naturally considered as a factor that influences budgetary increase or decrease. There is no reliable data available for military deflators and is not used to analyse defence budgets even by reputed databases like that of SIPRI and IISS.

Trends in India's Defence Budget (2005-16)

According to SIPRI, India is one of the top-10 global spenders in the defence sector. Its military expenditure has tripled since the 1980s and has seen a growth rate of 41 per cent since 2005. Figure 2 and 3 help to demonstrate trends in the military expenditure of India and also provide a global context in terms of international expenditures:

Figure-2
Global Military Expenditures (2005-15)³⁹

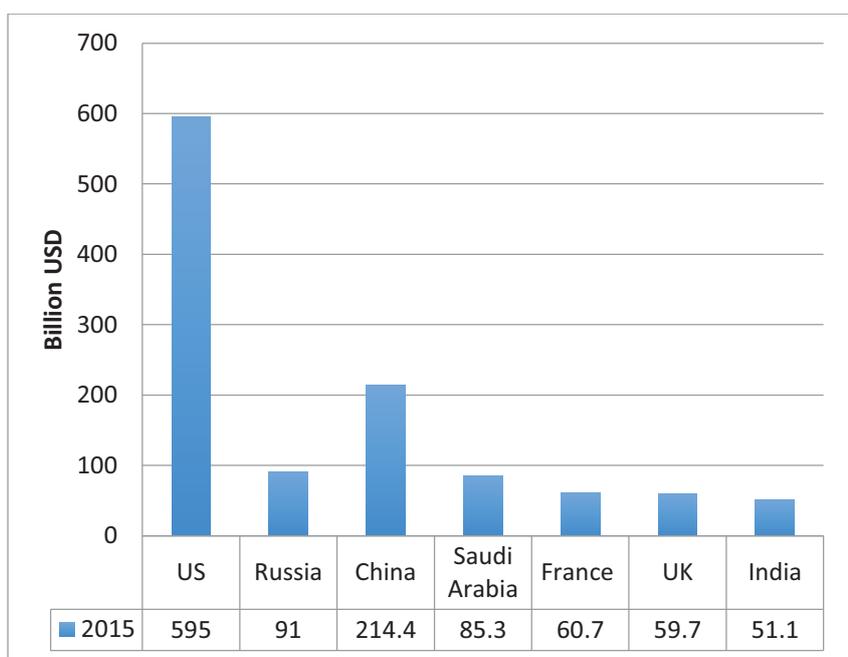


Source: Data collated from *SIPRI Military Expenditure Database (1988-2015)*.⁴⁰

³⁹ All figures taken from the *SIPRI Military Expenditure Database (1988-2015)*, expressed in USD Billion at constant 2014 exchange rates.

⁴⁰ SIPRI, *SIPRI Military Expenditure Database* (Solna: Stockholm International Peace Research Institute), accessed March 2016, <https://www.sipri.org/databases/milex>. Data collated from *SIPRI Military Expenditure Database (1988-2015)*.

Figure-3
World Military Expenditures (2015)

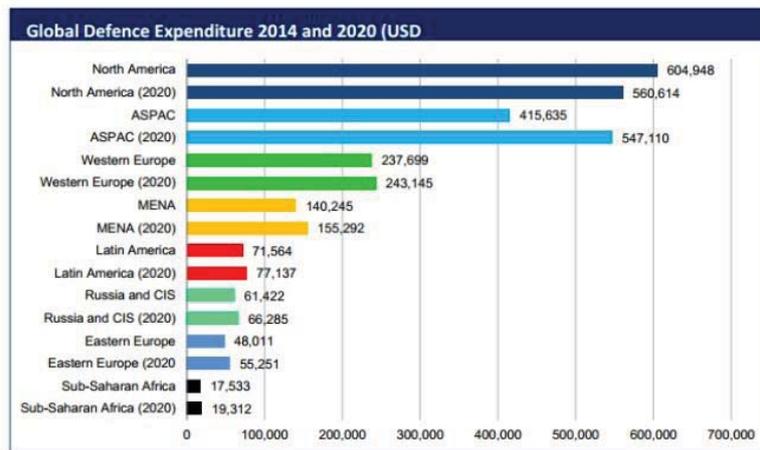


Source: Data collated from *SIPRI Military Expenditure Database (1988-2015)*.⁴¹

In 2015, India was the seventh biggest military spender of the world with USD 51 bn defence budget. At the end of 2014, IHS Jane's published its estimates for global defence budgetary growth by 2020 (Figure 4). Defence budgets in general are trending in all the regions of the world (Asia Pacific, Middle East, Russia, Europe and Latin America) and decreasing in the North America.

⁴¹ Ibid.

Figure-4
Global Defence Expenditure (2014-20)



Source: “Analysis: Five Key Global Defence Budget Trends for 2015,” *IHS Jane’s Defence Weekly*, December 16, 2014, <http://www.janes.com/article/47013/analysis-five-key-global-defence-budget-trends-for-2015>.

Table 1 shows the defence budget of India and growth rates on actual expenditures from previous years. As discussed before, there is a difference between the definitions of defence budgets provided by SIPRI and the Indian budget papers. Indian defence services budget is actually a subset of the SIPRI definition and useful in terms of specifying the amount allocated for the development and maintenance of conventional capability to counter external threats. Table 1 provides India’s defence budgets based on both mentioned definitions. There tends to be a difference between the amount allocated and amount spent for defence, each year. Since the government always has the amount actually spent before formulating the new budget, growth over previous year’s actual expenditure is a better metric to analyse the government’s willingness to increase budgetary allocations.

Table-1
Indian Defence Budget and Growth Rates (2005-16)

Fiscal Year	Defence Budget GoI Definition		RE/ Actual Expenditures INR	Growth in Defence Budget over Previous Year Actuals*	Defence Budget SIPRI Definition ⁴²	
	INR	USD (MER)			INR	USD (MER)
2005-06	830	18.73	805.4898 RE	7.2	1035	23.36
2006-07	890	19.69	854.9464	10.4	1102	24.38
2007-08	960	23.88	916.8028	11.6	1190	29.6
2008-09	1056	22.9	1142.2328	15.1	1518	33
2009-10	1417.03	29.8	1417.8108	24.09	1993	42.04
2010-11	1473.44	32.31	1541.1671	3.9	2146	47.06
2011-12	1644.15	34.18	1709.1328	6.6	2373	49.33
2012-13	1934.07	35.81	1817.7578	13.1	2573	47.64
2013-14	2036.72	33.72	2034.9935	12	2846	47.11
2014-15	2240	35.98	2223.7	10	3118	50.08
2015-16	2467	40.3	2186.9	11	3100.79	49.81

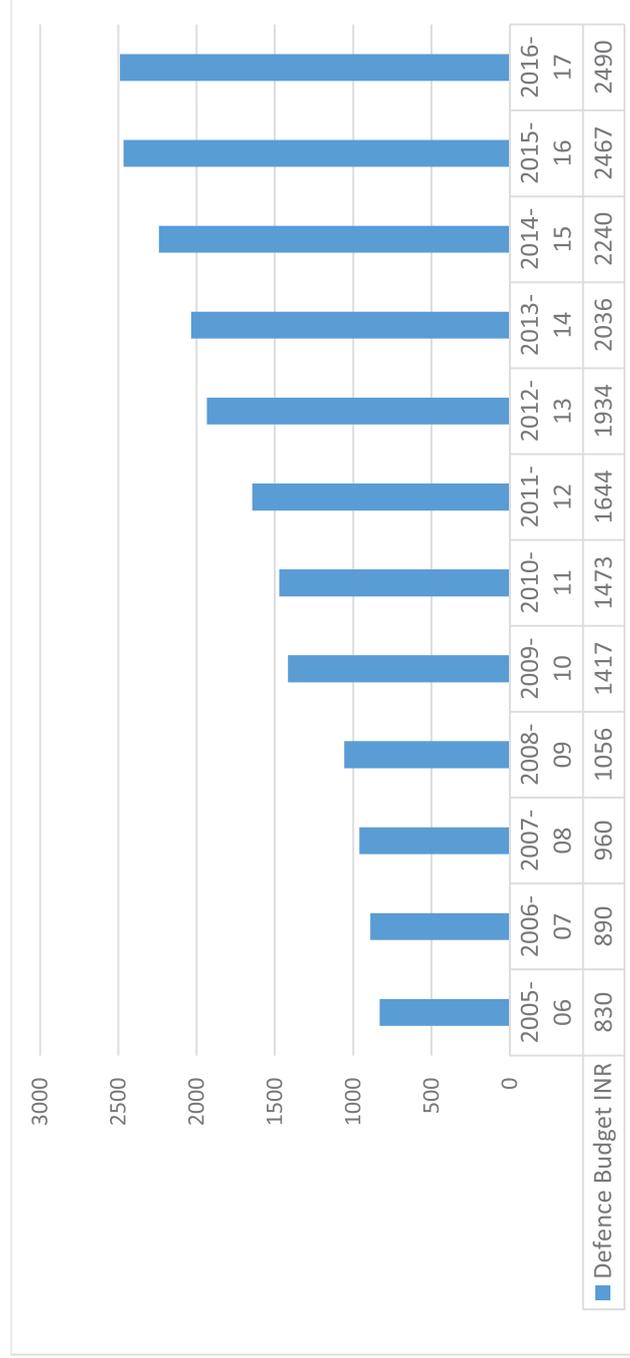
Source: Data collated from various official Ministry of Finance budget documents (2004-16).⁴³

*Note: Growth rates calculated by the author.

⁴² The figures provided in Table 1 are different from those in Figure 5. The figures provided in Table 1 are based on current USD exchange rates for each given year and have been taken from Indian government's budget documents. However, in Figure 5, the numbers are based on constant 2014 exchange rates.

⁴³ Ministry of Finance, GoI, "Union Budget," accessed March 2016, <http://indiabudget.nic.in/>; Ministry of Finance, GoI, "Economic Survey," accessed March 2016, <http://indiabudget.gov.in/survey.asp>.

Figure-5
India's Defence Budget (2005-17)



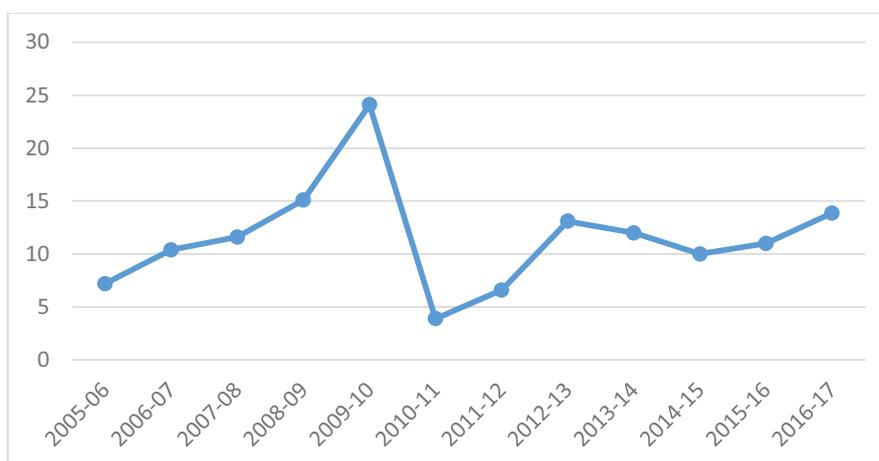
Source: Data compiled from various Ministry of Finance documents (2004-16).⁴⁴

⁴⁴ Ibid.

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It is clear from the tables and figures, that even though the defence budget is incremental every year, the growth rate has fluctuated over the past decade. Figure 6 shows a gradual increase from 15 per cent to a staggering 24 per cent in 2009. The driving factor for this was the pay raise promulgated by the Sixth Pay Commission. This is discussed in detail in the following sections. After 2009, there was nominal growth in India's defence budget over the next two years followed by an average growth rate of 11.5 per cent for the next four years:

Figure-6
Growth in Defence Budget over Actuals (2005-17)

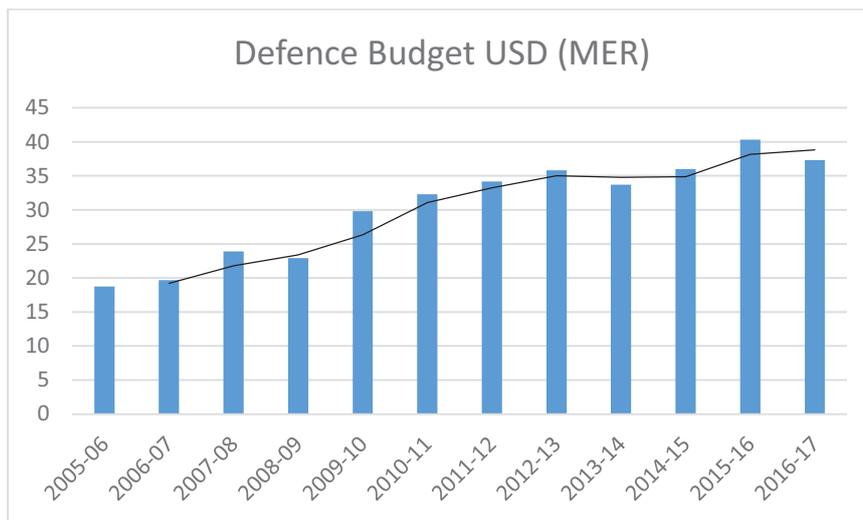


Source: Data points selected from Table 1.

Interestingly, the same budget expressed in USD at current year exchange rates shows slightly different growth patterns (Figure 7). On three occasions (2008, 2013 and 2016), the budget had negative growth rate. Inter alia this has implications for the modernisation endeavors since around 70 per cent of the capital budget is spent on importing arms.⁴⁵ The share of capital budget has increased dramatically since the mid-2000s and hovers around 50 per cent of the total budget every year.

⁴⁵ KPMG, *Union Budget 2014: Defence Post-Budget Sectoral Point of View*.

Figure-7
Defence Budget Billion USD (MER)



Source: Data used from Table 1.

Political Will, Macroeconomic Indicators and Defence Budgetary Growth

Political Will

Selection and maintenance of political aims is the most important principle of national security and a basic driver of effective military expenses. Political aims are selected by the political leadership and maintained and attained by the defence establishment. In theory, budgetary allocations shed light on the political aims, threat perceptions and willingness to spend in certain areas, of the leadership.⁴⁶

The study acknowledges that the concept of political will is very complex for several reasons. It involves intent and motivation, which are qualitative variables and are inherently an intangible phenomena. An unbiased analysis of political will is not possible and is prone to

⁴⁶ Vinay Kaushal, "Defence Budget: Constraints and Capability Building," in *Core Concerns in Indian Defence and the Imperatives for Reforms*, ed. Vinod Misra (New Delhi: Pentagon Press, 2014).

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manipulation and misrepresentation. Also, political intent exists on multiple levels from individual to organisational and basic to systemic and can be influenced by internal and external factors. A brief definition of political will is 'the commitment of actors to undertake actions to achieve a set of objectives.'⁴⁷

National military expenditures help to analyse the military might of a country, as they are an indicator of the national will to develop military capabilities and also demonstrate the allocation of resources in certain areas. Even though high budgets may not be strong indicators of the military effectiveness of a state, they do reveal the size of the defence infrastructure. Thus, the biggest military powers in the world, e.g. US, Russia and China also have the biggest military budgets. Many respected military databases use defence expenditures as an international measure of military power.

This study does not employ a formal econometric model or regression analysis of military spending and political will, since political will is not a completely quantifiable phenomenon. As an affirmative indicator of political will most of the military expenditure databases and analysts have used financial resources committed to defence as a tangible expression of prioritised political intent for militarisation. This study has mainly used the covariance of defence spending with macroeconomic growth indicators (GDP growth rate, inflation rate, fiscal deficit etc.) and percentage share of defence budget in overall government expenditure as positive indicators of political will. These indicators help to provide a basic understanding of governmental priorities in the face of available resources. A positive/negative relationship between allocation of funding for defence with increasing economic growth would help to understand to what lengths the Indian government is willing to go and what other sectors it is willing to compromise for increasing military capacity. Such indicators provide a macro level view, both of political priorities and of capacity (in the basic sense of resource availability), but they do not help extensively to demonstrate the complexities of political will. The role of military industry in the development of a country's economy is a basic indicator whether defence spending is a contributory or a burden for a

⁴⁷ Derick W. Brinkerhoff, "Unpacking the Concept of Political Will to Confront Corruption" (brief no.1, Chr Michelsen Institute, Bergen, 2010), <http://www.cmi.no/publications/file/3699-unpacking-the-concept-of-political-will-to.pdf>.

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country's economy. In a developing country like India, military spending is more of a burden due to an embryonic defence industry and import oriented capital expenditures. Thus, the extent of burden the Indian government is willing to bear would reflect in the percentage share of defence spending in the total government budget and can be a viable indicator of the government's political will to militarise.

There can be various other factors that influence military spending like external or internal security situation, power projection, defence economy and so on. In order to stay within the scope of the study, financial allocation is only analysed as a partial indicator of political will. The political executive of a nation strives to achieve national security through various means – of which military means is one. Various interest groups and other constituencies lobby pressure on governments to adopt different and sometimes contradictory courses of action. In some scenarios, a high budgetary allocation in a certain area may be a result of political leverage by a certain party or interest group instead of national objectives. Thus, the structure of a defence budget and certain areas of appropriations may often be a result of political, security, macro- and microeconomic and other concerns that impact the fiscal process.

Miscellaneous Indicators of Political Will

From an outsider's perspective, India's defence budget is quite significant. However, within the country it is a hotly debated subject. The literature is filled with criticism of the government for not allocating enough for defence. Both the 15th and 16th *Lok Sabha* Committees harshly criticised the government for inadequate defence outlay and under-utilisation of the allocated budgets. The data shows the difference between the demand of drafts and amount allocated as quoted in the 20th *Lok Sabha* report of the Standing Committee on Defence. The Committee observed that only meager amounts were being allocated for new schemes and most of the capital budget was consumed by committed liabilities. This was seen as slowing down the pace of force modernisation. However, one expert observed the Committee's recommendations to be naïve.⁴⁸

⁴⁸ Amit Cowshish, "Standing Committee on Defence (16th *Lok Sabha*): Striking Old Notes on Debut," *Journal of Defence Studies* 9, no. 2 (2015): 9-19, http://www.idsa.in/system/files/jds/jds_9_2_2015_AmitCowshish.pdf.

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Historically, India has never overburdened its economy with military expenditure, and the basic principal has been that a stronger economy will lead to higher defence allocations. P. Chidambaram, the then Finance Minister, while speaking at IDSA stated:

Defending and promoting national security stands on three important pillars: human resources; science and technology; and money. Money is also the pillar that supports the first two pillars. Money comes out of growth.⁴⁹

It is *presumably* thought that low allocations in defence are a result of structural problems in the defence bureaucracy and general financial constraints.⁵⁰ Different governments since the 1990s have been trying to cater with various decision-making and spending problems related to defence. Policy initiatives like the Defence Procurement Procedure (DPP) was announced in 2002, a Defence Offsets Policy was released in 2006, a Long-Term Integrated Perspective Plan (LTIPP) in 2009 and a Defence Production Policy in 2011. Eight different committees and task forces were created to analyse various aspects of national defence. The DPP was revised in 2005, 2006, 2008, 2009, 2011, 2013 and 2016.

Even though India imports 70 per cent of its defence equipment, indigenisation of technologies and self-reliance have been the primary goals of its defence policy. The DPP 2010 emphasised achieving higher Self-Reliance Index in key technologies and manufacturing. It also suggested creating a national technology fund to finance research in universities and other institutions relevant to national security. Dr Kalam, the then Scientific Advisor to the Defence Minister, headed a review committee in 1995 to contemplate issues of uncertain supply of defence equipment from the countries of the erstwhile Soviet Union. The committee looked into options for India to raise the level of indigenous content in defence equipment from existing 30 per cent to 70 per cent by 2005. Following systems identified for future use: 'automated air defence; satellite-based navigation; air and space-based early warning; C4 I; underwater sensors and weapons; medium and long-range guided missile systems with launching capacity from multiple platforms; Unmanned Air Vehicles (UAVs); stealth aircrafts; airborne electronic warning systems;

⁴⁹ Kaushal, "Defence, Budget: Constraints and Capability Building," 182.

⁵⁰ Cowshish, "Standing Committee on Defence (16th Lok Sabha): Striking Old Notes on Debut."

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Electronic Counter Measure (ECM and ECCM); and very small aperture terminals for satellite communication Global Positioning System receivers.⁵¹

In 2001, the government constituted the Ajay Vikram Committee to prevent stagnation in the middle ranks of the Army and make it a 'lean and mean' organisation. The National Democratic Alliance (NDA) government stated that the recommendations of the Committee would be implemented and a restructuring of the officer-level cadre would be done. However, the Army has instead expanded manpower rather than reducing it.⁵²

Absence of a National Security Objective and Strategy is thought to be the basic reason behind the lack of focus on defence planning. The government issues Operational Directives through the Defence Minister that provide a starting point to the defence planners in India and qualify as political directive of sorts instead of a formal White Paper. After the 12th Five-Year Defence Plan (FYDP) (2012-17), MoD issued its Operational Directives, which were stated by all the services to be a good enough basis for preparing the plan. There are still discussions on the gaps existing between the FYDPs and national security imperatives.⁵³

In 2012, the Defence Acquisition Council approved both the FYDP 2012-17 and the Long-Term Integrated Perspective Plan (LTIPP) which is a strategic document. It lays out government policy development of capabilities according to the future operational requirements and the role that the country will play within the region and outside. It is based on the government's assessment of possible cases of aggression and a means to direct long-term policy. Based on the recommendation of the LTIPP the future force structures will be built.⁵⁴ The MoD in response to a question by the 15th Lok Sabha Standing Committee about long-term planning of

⁵¹ "Ajai Vikram Panel's Proposals for Army to be Implemented," *Economic Times*, December 17, 2004, http://articles.economictimes.indiatimes.com/2004-12-17/news/27379908_1_commanders-defence-secretary-army.

⁵² IISS, *The Military Balance* (Washington, D.C.: International Institute of Strategic Studies), accessed August 2017, <http://www.iiss.org/en/publications/military-s-balance>. Data collated from *The Military Balance* issues (2006-16).

⁵³ Amit Cowshish, "Financial Management in Defence," in *Core Concerns in Indian Defence and the Imperatives for Reforms*, ed. Vinod Misra (New Delhi: Pentagon Press, 2014), 215.

⁵⁴ "India's Military Modernisation up to 2027 Gets Approval," *Defence Now*, accessed August 17, 2017, <https://archive.is/9isKh>.

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force modernisation stated that a top-down revision of LTIPP is being pursued by the government. The process, back in 2008-09, incorporated views from three services, MoD, NSA and various other agencies. The revised LTIPP would articulate the National Security Strategy, National Military Strategy and National Military Objectives etc.⁵⁵

Since the LTIPP is considered a strategic document, it would have been more appropriate for it to be approved by senior political leadership of the country than the DAC. The process was also criticised for not taking into account the budgeting problems at the initial stages of devising the Plan. Thus, it is generally expected that even the approved programmes of the government get major re-adjustments primarily due to fiscal realities considered beforehand.

Macroeconomic Indicators (2004-15)

The sheer volume of the defence budget speaks of the political motivation of Indian leaders to spend on defence. However, since it does not exceed 2.5 per cent of the GDP, it is considered theoretically affordable. Since 1995, the defence budget had a steady growth of more than 5 per cent in real terms.⁵⁶ Summarised below is a year on year exposé from 2004-15 of the macroeconomic indicators and corresponding defence spending figures followed by major trends in the defence budget growth and some exogenous influencers of defence funding.

2004: INR 770 billion was allocated for defence services expenditure in 2004-05 which was an increase of 21.6 per cent of the revised estimates of 2003-04.⁵⁷ The GDP growth rate remained steady at 7.05 per cent and fiscal deficit remained 3.9 per cent. With relatively stable macroeconomic indicators, the defence budget stood at 2.5 per cent of the total GDP.⁵⁸

⁵⁵ Cowshish, "Financial Management in Defence," 215.

⁵⁶ Bhartendu Kumar Singh, "Debating Defence Expenditure" (New Delhi: Institute of Peace and Conflict Studies, 2005), <http://www.ipcs.org/article/india/debating-defence-expenditure-1688.html>.

⁵⁷ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey."

⁵⁸ Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices," October 28, 2011, http://planningcommission.nic.in/data/datatable/data_2312/DatabookDec2014%2012.pdf. Macro indicators collated from the Planning Commission of India's data-sets.

2005: In 2005-06, INR 830 billion was allocated for defence services expenditure which was an increase of 7.2 per cent of the revised estimates of 2003-04.⁵⁹ The GDP growth rate was 9.48 per cent and fiscal deficit remained -3.96 per cent. With relatively stable macroeconomic indicators, the defence budget stood at 2.44 per cent of the total GDP.⁶⁰ However, the growth of 7.2 per cent was considered highly insufficient by the defence planners to sustain the same level of military capability given the national inflation and the military deflator. A steady growth of 10-12 per cent was advocated to maintain the same level of budgetary support for defence. Some critics also suggested that instead of the amount, the direction and the orientation of the budget needed course correction.⁶¹

2006: The total funds allocated to the MoD for defence services were INR 890 billion.⁶² A rapidly growing economy, with the GDP growth rate of 9.5 helped to increase the defence budget by 7.2 per cent based on previous years' revised estimates.

2007: The defence budget in 2007-08 saw a growth of 11.6 per cent over the previous years' actual expenditure. INR 96 billion was earmarked for defence services.⁶³ It was 1.9 per cent of the GDP and 14.10 per cent of the total government expenditure. With a growing economy, the government's resource base also expanded, however, this did not lead to a higher allocation of funding as a percentage of government's total expenditure. Furthermore, a cut of 5 per cent was imposed again in 2007-08 due to the fiscal deficit of 2.54,⁶⁴ which was lowest in the entire decade being analysed in this study.

⁵⁹ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey."

⁶⁰ Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

⁶¹ Singh, "Debating Defence Expenditure."

⁶² Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey."

⁶³ Ibid.

⁶⁴ Amit Cowshish, "A Perspective on Defence Planning in India," *Strategic Analysis* 36, no. 4 (2012): 680-686, doi: 10.1080/09700161.2012.689540.

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2008: The defence budget for 2008-09 stood at INR 1056 billion with a growth rate of 15.1 per cent on actuals.⁶⁵ As a percentage of GDP, the budget grew from 1.9 per cent to 2.3 per cent, and as a percentage of overall government expenditure it grew to 13.5 per cent. With an inflation rate of 9.1 per cent (CPI)⁶⁶ the budget growth was unassuming. Revenues shared 54.55 per cent of the budget and saw a growth of 5.1 per cent only. The 5.1 per cent increase was less than sufficient viewing the inflation rate at 9.1 CPI.⁶⁷

2009: In view of the economic downturn, the total budget growth rate at 24.09 per cent was considered moderate by some, however, it remains the biggest jump over the 2005-15 period. Initially, it was felt that economic pressures had contributed to slowing down the flow of funds in capital outlays because the growth over previous years' budget estimates was only 14.3 per cent. As the Armed Forces were on a major modernisation drive since 2005 growth stagnation was not something the MoD was looking for.⁶⁸ Also, the share of capital expenditure had a negative growth of 6.85 per cent points over the previous year and fell down to 38.6 per cent of the total defence budget. Nonetheless, the budgetary allocations later did not seem to be insufficient. The capital outlays in 2009-10 had a staggering growth rate of 34.1 per cent over the previous year's actual expenditure. The low inflation rate 3.6 (WPI)⁶⁹ should also have improved the purchasing power of India while importing major equipment and technologies.

2010: Defence services were allocated INR 1473.03 billion, which stood at 12.99 per cent of the total government expenditure and fell down to 1.99 per cent of the GDP. The defence budget in 2010-11 had a growth rate of 3.9 per cent only over the previous year's actual expenditures.⁷⁰ The macroeconomic indicators had improved since 2009. The GDP

⁶⁵ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey."

⁶⁶ Consumer Price Index.

⁶⁷ Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

⁶⁸ L. Kumar Behera, "India's Defence Offset Policy," *Strategic Analysis* 33, no. 2 (2009): 242-253.

⁶⁹ Wholesale Price Index.

⁷⁰ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey."

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growth rate increased from 8.5 to 8.9 per cent, inflation rate went down from 12.99 to 10.5 (CPI) and fiscal deficit also decreased from 6.46 to 4.7 per cent.

2011-12: The total defence services budget in 2011-12 was INR 1644.15 billion⁷¹; 2.05 per cent of the GDP and 12.94 per cent of the total central government expenditure. With the lowest GDP growth rate (6.69) since 2003-04, high inflation (8.4) and fiscal deficit (5.7), the growth in defence budget was low-moderate at 6.6 per cent of the actual expenditures from 2010.⁷²

2013: When the budget was announced in March 2013 Indian defence analysts were disappointed, as the budgetary allocation was increased at the rate of 5 per cent.⁷³ Economic slowdown was considered the primary reason for low defence allocation. The GDP growth rate stagnated at 4.7, rate of inflation remained 9.5 (CPI) and 7.5 (WPI). Fiscal deficit reduced relatively from 4.9 in 2012-13 to 4.5 per cent of the GDP. At the GDP growth rate of 4.7,⁷⁴ the government's revenue receipts must have come under sharp pressure, and should have forced it to reserve spending on Non-plan Expenditures. However, a closer analysis of the military spending in India shows a different picture. Even with economic slowdown, allocation for defence services increased to INR 2036.72 billion with a growth rate of 12 per cent over 2012's *actual* expenditures. The growth rate was 14.1 per cent of the 2012 revised estimates (INR 1785 billion). Once again the percentage of GDP allocated for defence increased to 2.25 and the percentage of total government allocation for defence remained 12.8.

2014: A sum of 2240 billion was reserved for defence services expenditure in 2014-15. This was an average growth of 10 per cent. The economic situation had begun to improve. The GDP grew at 7.4 per cent

⁷¹ Ibid.

⁷² Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

⁷³ Laxman K. Behera, "India's Defence Budget 2013-14: A Bumpy Road Ahead" (comment, Institute for Defence Studies and Analysis, New Delhi, 2013), http://www.idsa.in/idsacomments/IndiasDefenceBudget2013-14_ikbehera_040313.

⁷⁴ Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

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and inflation rate decreased to 3.4 per cent (WPI). However, fiscal deficit persistently remained above 4 per cent and the inflation rate in CPI terms remained high at 10.9.⁷⁵

2015: India announced a core budget of INR 2290 billion for defence services expenditure in 2015-16. The defence budget grew at the rate of 2.9 per cent of the budget estimates of 2014-15.⁷⁶ The government's fiscal consolidation policies helped to reduce the fiscal deficit about 0.2 - 0.5 per cent points. The fiscal deficit remained at 3.9 per cent of the GDP, while the GDP growth rate till December 2015 was 7.8 per cent. Inflation rate at 6.4 was the lowest since 2008-09.⁷⁷ Since the defence establishment of India has generally been dissatisfied with the allocation of funding for defence services, it is thought that the improving economic condition will expand the resource base of the government and may result in further growth of the defence budget. The 2015-16 defence budget was the first full budget presented by Prime Minister U.B. Modi's government. Interestingly, at 1.7 per cent of the GDP, the defence budget was the lowest in the last decade. By some estimations, it was even the lowest percentage of GDP since 1962.⁷⁸ However, at 14.1 as a percentage of total government expenditures, the defence budget was the highest since 2006-07.⁷⁹

Defence Spending as a Percentage of GDP

As mentioned before, the percentage share of a country's defence budget in its real GDP is a rough indicator of the burden military expenditure is putting on the economy by allocating a segment of national resources to non-developmental expenditure. In the absence of a clear framework of evaluating affordability of defence spending, a time-series or cross-

⁷⁵ Ibid.

⁷⁶ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey."

⁷⁷ Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

⁷⁸ Ajai Shukla, "Defence Allocation Down to about 1.65 % of GDP, Lowest since the 1962 China War," *Business Standard*, March 1, 2016, http://www.business-standard.com/budget/article/defence-allocation-down-to-about-1-65-of-gdp-lowest-since-the-1962-china-war-116030100073_1.html.

⁷⁹ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey."

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country comparison is done by SIPRI and IISS etc. as well. However, the percentage share of GDP for defence has limited utility unless combined with other qualitative and quantitative indicators for a holistic view.

Even though economic growth over the last decade has helped increase India's defence budget threefold in nominal terms, as is evident from Figure 8, the GDP to defence spending ratio of India has remained somewhat consistent instead of growing with an improving GDP. This can be an important indicator of the significance of other sectors in the eyes of political leadership than defence. There is no preset GDP percentage allocated for defence in India. However, many defence analysts have advocated for a constant 3 per cent of GDP to be allocated for defence.⁸⁰ Fixing defence budget to a certain percentage of GDP may create volatility in annual allocation for defence in relation to the performance of the economy in any given year.⁸¹

⁸⁰ Cowshish, "Standing Committee on Defence (16th Lok Sabha): Striking Old Notes on Debut."

⁸¹ Cowshish, "A Perspective on Defence Planning in India."

Figure-8
Defence Budget as a Percentage of GDP

2015	2014 ^a	Country	Spending 2015 (\$ b.)	Change 2006-15 (%)	World share 2015 (%)	Spending as a share of GDP (%) ^b 2015	2006
1	1	USA	596	-3.9	36	3.3	3.8
2	2	China	[215]	132	[13]	[1.9]	[2.0]
3	4	Saudi Arabia	87.2	97	5.2	13.7	7.8
4	3	Russia	66.4	91	4.0	5.4	3.5
5	6	UK	55.5	-7.2	3.3	2.0	2.2
6	7	India	51.3	43	3.1	2.3	2.5
7	5	France	50.9	-5.9	3.0	2.1	2.3
8	9	Japan	40.9	-0.5	2.4	1.0	1.0
9	8	Germany	39.4	2.8	2.4	1.2	1.3
10	10	South Korea	36.4	37	2.2	2.6	2.5
11	11	Brazil	24.6	38	1.5	1.4	1.5
12	12	Italy	23.8	-30	1.4	1.3	1.7
13	13	Australia	23.6	32	1.4	1.9	1.8
14	14	UAE ^c	[22.8]	136	[1.4]	[5.7]	[3.2]
15	15	Israel	16.1	2.6	1.0	5.4	7.5
Total top 15			1350		81		
World total			1676	19	100	2.3	2.3

[] = SIPRI estimate; GDP = gross domestic product; UAE = United Arab Emirates.

Source: Sam Perlo-Freeman, Aude Fleurant, Pieter Wezeman and Stemon Wezeman, "Trends in World Military Expenditure" (Solna: Stockholm International Peace Research Institute, 2016), accessed August 2016, <https://www.sipri.org/sites/default/files/EMBARGO%20FSI1604%20Milex%202015.pdf>.

Note: The data includes expenditures on military pensions and paramilitary forces, which are not a part of the official defence budget of India.

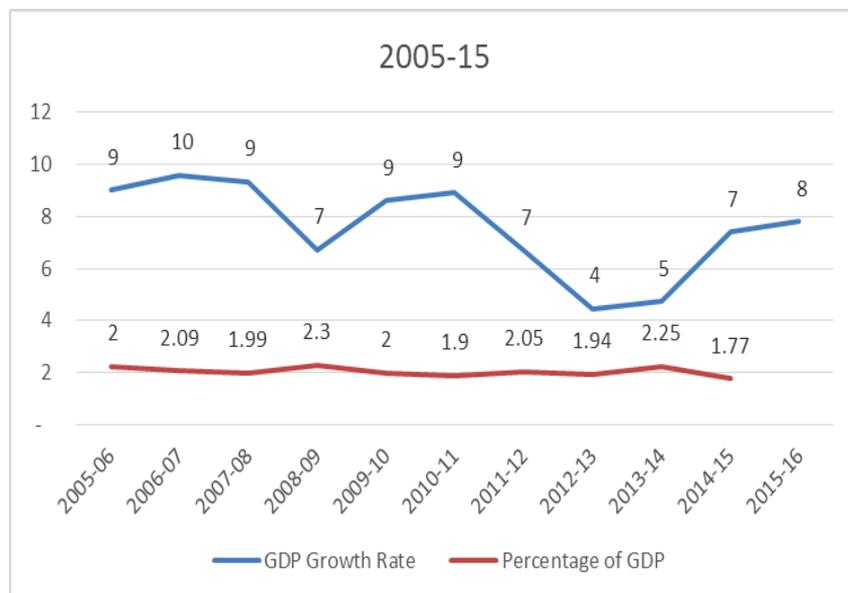
a Rankings for 2014 are based on updated military expenditure figures for 2014 in the current edition of the SIPRI Military Expenditure Database. They may therefore differ from the rankings for 2014 given in the SIPRI Yearbook 2015 and in other SIPRI publications in 2015.

b The figures for military expenditure as a share of gross domestic product (GDP) are based on estimates of 2015 GDP from the International Monetary Fund (IMF) World Economic Outlook Database, Oct. 2015.

c The figures for the UAE are for 2014, as no data is available for 2015. The percentage change is from 2006 to 2014

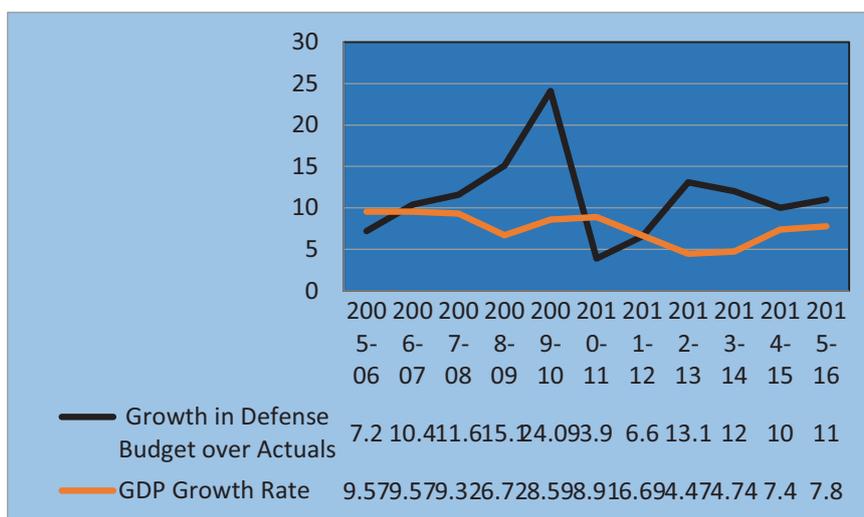
India's defence expenditure to GDP ratio has continued to decline over the last 30 years and it has not increased beyond 2.5 per cent in the last decade. This is generally considered a benign level of spending from an economic perspective, especially for a country like India - the numerical strength of whose military forces is more than a million. A comparative GDP percentage for defence of other high defence spenders in 2015 is provided in Table 2:

Figure-9
India's Defence Expenditure (% of GDP)



Source: Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey"; Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

Figure-10
Covariance of GDP and Defence Growth Rates



Source: Data points from discussion above (Year on Year exposé).⁸²

The data presented in the Figure 9 and 10 does not demonstrate a correlation between GDP growth and subsequent increase in the defence budget. The highest value for GDP percentage allocated for defence in the last decade was 2.3 in 2008-09, when the corresponding growth rate was 9 per cent and increase in the defence budget was 15.1 per cent. While the lowest GDP growth rate (4 per cent-2012-13) for the last decade did not result in a dramatically smaller share of defence as a percentage of GDP, at 1.9 per cent with the corresponding growth in defence budget at 13.1 per cent. Hike in the defence budget in 2009, due to the inclusion of the Sixth Pay Commission's recommendations in the budget might have been a one-time event which brought a 15 per cent increase in pays and allowances (revenue expenditure) and an overall growth rate of 24 per

⁸² Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey"; Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices."

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cent.⁸³ After that, the highest share of GDP for defence (2.25) recorded was in 2013-14 when the GDP growth rate remained 7 per cent and subsequently fell to 1.7 per cent when the GDP growth rate increased to 8 per cent.

GDP per capita is also used by many international military expenditure databases to understand the implications of change in income for defence spending. Generally, rise in income means economic growth, which may or may not lead to higher defence spending. Maisels and Nissanke argue that, 'higher income may lead to structural changes, inequalities and hence conflict requiring higher military spending to maintain internal control.'⁸⁴ However, this study has employed the Indian government's definition for defence which excludes spending on internal security and paramilitary forces. Thus, the analysis does not present the internal security situation of India and spending in that domain.

Defence Allocation and Fiscal Deficit

Another indicator of political motivation to spend on the military could be effects of high fiscal deficit rates on defence spending. Table 2 shows a comparison of trends in the fiscal deficit, growth in military expenditure and percentage of defence in the overall government budget:

⁸³ Amiya Kumar Ghosh, "Defence Planning in India at Crossroads," in *Core Concerns in Indian Defence and the Imperatives for Reforms*, ed. Vinod Misra (New Delhi: Pentagon Press, 2014), 88.

⁸⁴ Alfred Maisels and Machiko Nissanke, "The Determinants of Military Expenditures in Developing Countries," *World Development* 14, no. 9 (1986): 1125-1140.

Table-2
Growth Rate of India's Defence Budget and other
Macroeconomic Indicators

Fiscal Year	Rate of Fiscal Deficit	Defence Growth Rate on Actuals	% of Gov. Expenditure	Rate of Inflation	GDP Growth Rate
2005-06	3.96	7	15.6	4.2	9.5
2006-07	3.32	10	14.85	6.8	9.57
2007-08	2.54	12	12.39	6.2	9.32
2008-09	5.99	15	13.5	9.1	6.72
2009-10	6.46	24	13.8	12.3	8.59
2010-11	4.79	4	12.99	10.5	8.91
2011-12	5.7	7	12.94	8.4	6.69
2012-13	4.9	13	12.4	10.2	4.47
2013-14	4.5	12	12.8	9.5	4.74
2014-15	4.1	10	13.1	10.9	7.4
2015-16	3.9	3	14.1	6.4	7.8

Source: Based on data presented before and collated from the Ministry of Finance budgetary documents (2005-16).⁸⁵

There are multiple factors that affect the allocation for defence services in the total union budget. For example, the Fiscal Responsibility and Budget Management Act (FRBM Act 2003) obliged the government to eliminate revenue deficit and reduce fiscal deficit to three per cent of GDP by 31 March 2008. For this reason, the government even imposed a five per cent cut on the non-salary heads of the revenue expenditure of the defence services. Since the defence budget of India is incremental, it led to a lower revised estimates and resultantly low budgetary estimates for future budgetary allocations, even though the fiscal deficit was decreasing and GDP growth rate was 9 per cent. In 2007-08, the fiscal deficit decreased to an all-time low of 2.5 per cent resulting in a hike (19.7 per cent) in defence budget growth in 2008-09 over the previous year's actual

⁸⁵ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey"; Ministry of Finance, GoI, accessed August 2016, <http://finmin.nic.in/>.

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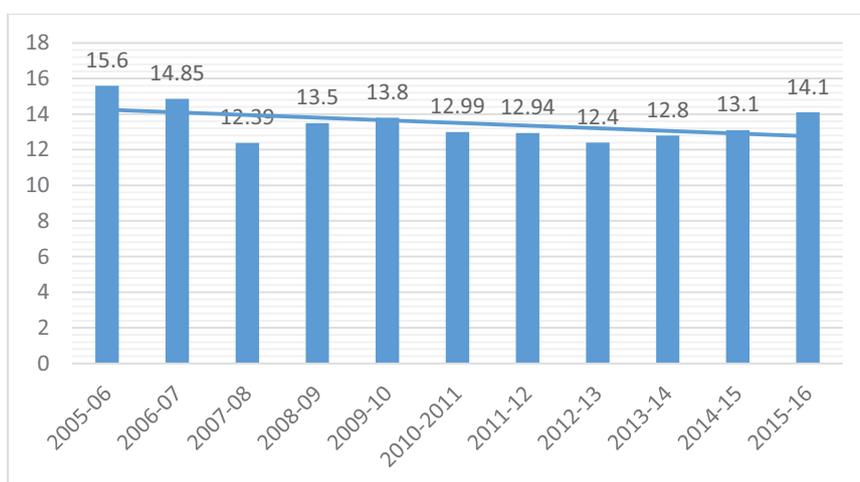
expenditures, a year before 2009-10 when the budget had to be increased due to the Sixth Pay commission's recommendations. The capital side of the budget was increased a staggering 27 per cent.

At other times, however, fiscal deficit was not the deciding factor for defence allocation. The deficit in 2007-08 rose to 5.99 per cent, but this did not make the government reduce the defence budget in 2009-10. At that time, revenue budget increase was mandatory because of the Sixth Pay Commission's recommendations. It should be noted though that the capital side also saw a growth of 34 per cent - an indicator of the significance of defence. This should also be seen in the context of the Mumbai attack that happened in 2008. In 2014-15, the situation was not similar to 2006-07. The fiscal deficit had remained above 4 per cent for six years, an indicator of the problems the government was facing in fiscal management. Also, the GDP growth rate remained low at 4 and 5 per cent for the previous two years. In comparison to 2006-07, the fiscal deficit did not decrease significantly and the cut in defence budget (8.4 per cent from 10.99 per cent) was not very significant either. The government did not impose a mandatory 10 per cent cut on the revenue budget as it did in 2012-13 and 2013-14. In 2015, the defence budget growth was just 3 per cent and the fiscal deficit was 3.9 per cent. Under the revised goals of the 12th Plan and FRBM Act, fiscal deficit needs to be brought below 3 per cent of the GDP.

Defence Budget as a Percentage of the Union Government Expenditure

A reliable metric to gauge the significance of defence is the percentage allocated to it in the overall governmental expenditure for a given year. Figure 11 provides the trend of the total Indian government's expenditure on defence. In the last decade, it has not increased more than 15 per cent:

Figure-11
Defence as a Percentage of Union Gov. Expenditure (2005-16)



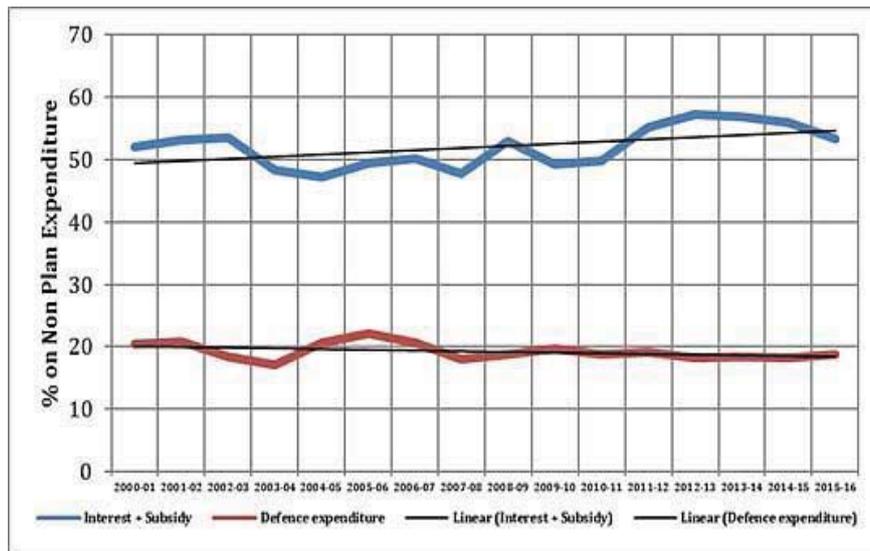
Source: Data collated from Ministry of Finance website (2005-16).⁸⁶

Interestingly, the percentage of defence budget in the government's total expenditure should have increased after 2010 as compared to the period between 2005 and 2010 since the government's resource base is shrinking in the wake of 13th and 14th Finance Commissions post-2010. Under the recommendations of the 14th Finance Commission, the states' share in the central government's divisible pool of union taxes has been increased to 42 per cent. However, the percentage share of defence in the government's expenditure did not increase in proportion to this development. There must be other variables in the background to this consequence and this does not effectively communicate a lack of will to spend on defence, yet if the government had increased the budget it would not have seemed a deviation from the past.

Approximately seventy five per cent of the 'Non-Plan Expenditures' of the total Indian government's expenditure is constituted of interests, subsidies and defence expenditure. Defence, however, constitutes a small portion of this expenditure. As shown in Figure 12, India's defence budget has hovered around 20 per cent of its total non-plan expenditure since 2000:

⁸⁶ Ibid.

Figure-12
Defence as a Percentage of Non-Plan Expenditures (2000-16)

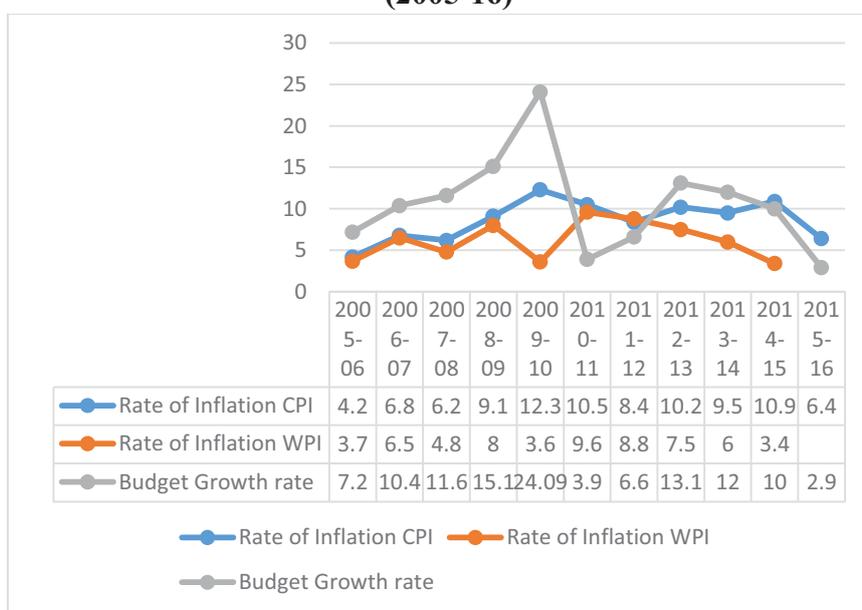


Source: Vinay Kaushal, “Defence Budget 2015-16: The Bad, the Worse and the Good” (comment, Institute for Defence Studies and Analyses, New Delhi, 2015), http://www.idsa.in/idsacomments/DefenceBudget2015%2520-16_vkaushal_020315.

Inflation Rates and Budget Increase

Inflation rate is a very useful metric to analyse the actual significance of any budgetary increase. Although the data in this study is nominal and not corrected for inflation rates or military deflators, a brief analysis of the implications of rising inflation rates on the budgetary growth rate has been conducted. Inflation in both CPI and WPI terms is reflective of the effects of inflation on the national budget. In general, India spends its entire revenue budget on buying goods and services within the country (some minor heads related to maintenance etc may use imported parts or technologies); and roughly 70 per cent of its capital budget to import weapons and related technologies. The inflation in CPI is thought to effect revenue related items and inflation measured in WPI terms effects imported items. Figure 13 demonstrates the correlation between capital and revenue budget growth rate and rate of inflation in both WPI and CPI terms.

Figure-13
Inflation Rates and Impacts on India's Defence Budget
(2005-16)



Source: Data collated from the Ministry of Finance budgetary documents (2005-16).⁸⁷

Sometimes price indices are used as a substitute to military deflators. A price index takes a specific collection of identical goods at two separate points in time, and measures the average change in price of that collection of goods. Some of the common price indices used are consumer price indexes, wholesale price index and general civilian price index. These are non-military in nature and do not provide implications specific to the defence sector. In fact, the influence of civilian price variations may not be obvious on military items as it is tacitly assumed that these indices can be used as military deflator surrogates. However, civilian price indices are a compromise due to absence of reliable military deflators. These are also used in this study to analyse the implications of variation in purchasing power of the military influenced by inflation.

It is observed that military related domestic inflation has a propensity to be higher than general inflation. Consequently, if defence

⁸⁷ Ibid.

budgets are adjusted considering general inflation only, the actual impact of inflation will be much higher on defence budgets. This may not be demonstrated clearly in the changing defence expenditures, especially in the figures published in open sources, but a correlation of military budgets with rate of inflation can be an indicator of the level of pressures a defence budget incurs due to hostile macroeconomic situations. It also exhibits the motivation of a political leadership to restrain or spend money on defence in the face of economic pressures.⁸⁸ For example, one analyst writes that Indian military's buying power has not increased with the increase in defence budgets due to five to ten per cent annual inflation in defence equipment costs.⁸⁹

Most Indian analysts use budgetary estimates or in some cases revised estimates to review budgetary changes. Actual expenditures is a better metric than both of them as it shows how much money the defence establishment is able to absorb and then the budget is increased over that amount. Indian government began declaring actual expenditures in 2009. The growth rate of defence budget over budgetary estimates is generally lower than the one measured over actual expenditures, as the MoD and the three services end up spending less than the budget that is allocated. Since this study has used growth rates based on actual expenditures an important qualifier for the higher growth rates could be that if accurate data for military deflator is available or the data provided here is corrected for inflation, the growth in defence budget would not seem so astounding.

In general, India underwent an economic boom from 2005-09, when the inflation rate was low, fiscal deficit was not very wide and GDP was growing at an average 9 per cent. Subsequently, even though the budget has nearly doubled in nominal terms, its actual worth might be less.

In fact, the remarkable increase in India's defence budget is not reflected in its revenue expenditures, which for most years as Figure 14 presents have been lower than the rate of inflation. Among other things, this holds great implications for the Indian military's operational preparedness especially when non-salary portions of this budget have also gone through recursive cuts after allocation. The data provided here uses

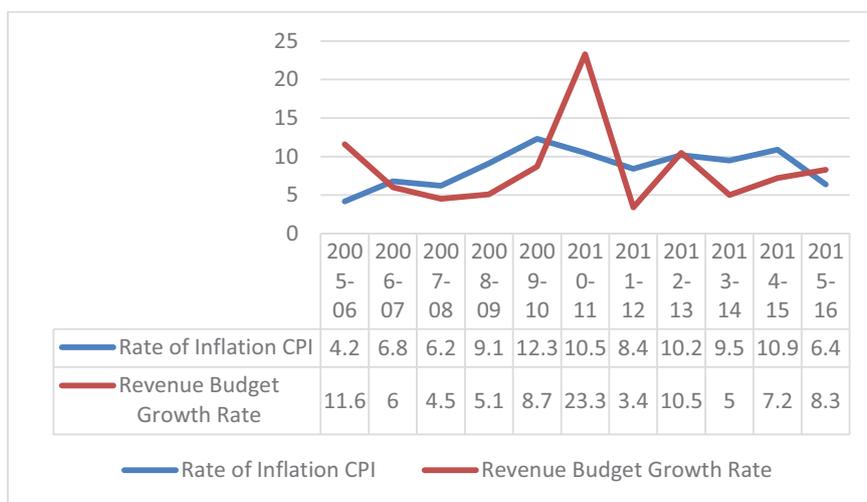
⁸⁸ E.R. Fetterly, "Problems Inherent in the International Comparison of Defence Expenditure," *Canadian Military Journal* (2007), <http://www.journal.forces.gc.ca/vo8/no1/doc/fetterly-eng.pdf>.

⁸⁹ Ajai Shukla, "Needed-Defence Budgeting Structures," *Business Standard*, March 2, 2015, http://www.business-standard.com/article/opinion/ajai-shukla-needed-defence-budgeting-structures-115030201355_1.html.

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growth of allocation over actual expenditures, which takes account of the under-spending or over-spending problem and also the mandatory financial cuts:

Figure-14
CPI and Revenue Budget Growth Rate (2005-16)

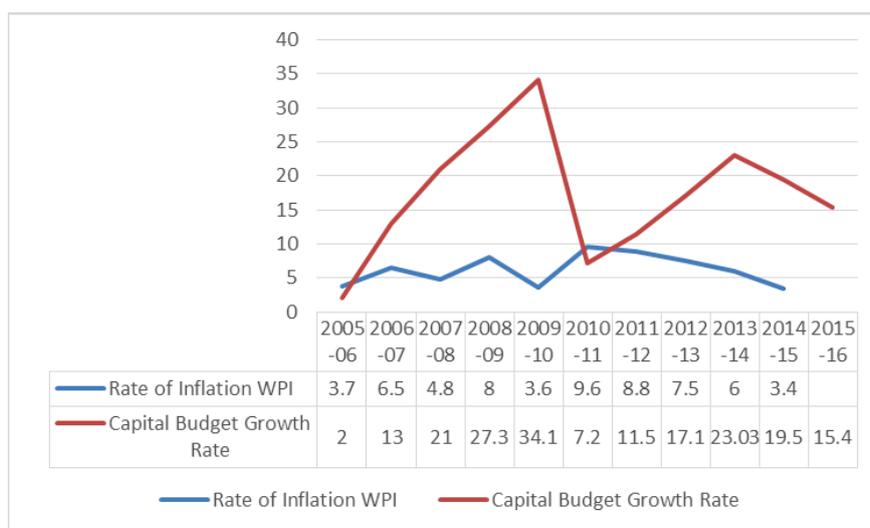


Source: Data collated from the Ministry of Finance budgetary documents (2005-16).⁹⁰

⁹⁰ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey"; Ministry of Finance, GoI, <http://finmin.nic.in/>.

Figure 15 indicates the growth rate of capital expenditure in comparison to the inflation rate in WPI terms:

Figure-15
WPI and Capital Budget Growth (2005-16)



Source: Data collated from the Ministry of Finance budgetary documents (2005-16).⁹¹

The story on the capital side is the opposite. Figure 15 shows that the general growth rate of capital expenditures has remained much higher than WPI inflation which means every year the defence establishment has received on average 17.4 per cent additional funding for modernisation and related procurements, while the inflation rate on average has remained 6.19 per cent.

Trends in Capital Budget (2005-15)

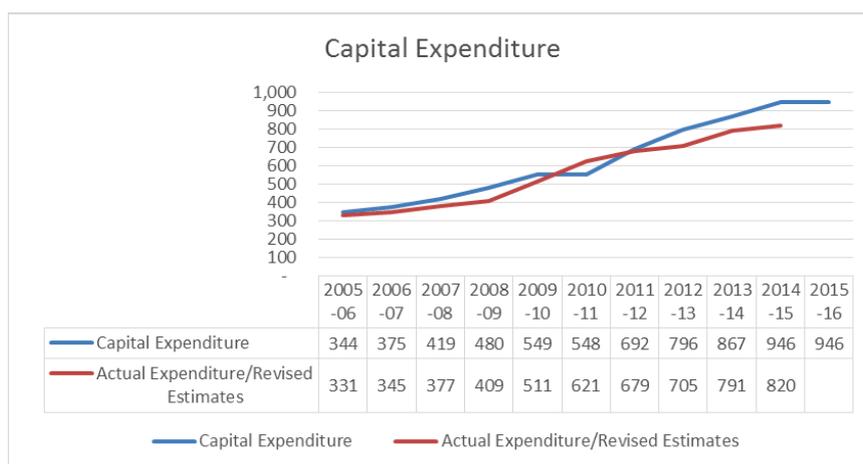
The general capital expenditure of India since 2005 has increased threefold in nominal terms from INR 334 billion to INR 946 billion, with an average growth rate of 18 per cent. In total, INR 6016 billion (~ USD

⁹¹ Ibid.

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104.8 billion)⁹² were allocated for capital expenditure in nominal terms between 2005-15:

Figure-16
India's Capital Expenditure (2005-16)



Source: Data collated from the Ministry of Finance budgetary documents (2005-16).⁹³

The literature on India's defence commentary suggests that the country generally spends nearly 70 per cent of its annual allocated capital budget on direct and indirect imports.⁹⁴ As discussed in the section on budget structure, the capital budget caters for 'expenditure on land, construction works, plant and machinery, equipment, tanks, naval vessels, aircraft and aero-engines, dockyards, etc.' About 1/3 of the actual spending on capital acquisition remains big ticket items, some of which were delivered to India in the timeframe covered by this study. The SIPRI arms transfer database indicates that approximately ~USD 32 billion (at constant 1990 exchange rate) worth big ticket items have been delivered to India from 15 countries over the last ten years. In terms of major defence equipment procured, approximately 90 per cent of the stated acquisitions were aircrafts, armoured vehicles, ships and missiles.

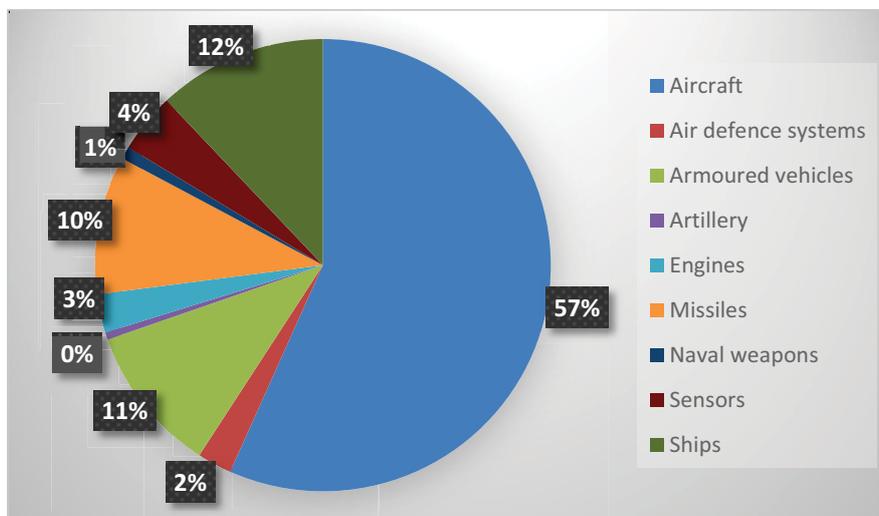
⁹² OANDA-Historical Currency Converter, accessed March 2016. Based on the average conversion rate of USD to INR (at 57.4) over the last ten years.

⁹³ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey"; Ministry of Finance, GoI, <http://finmin.nic.in/>.

⁹⁴ KPMG, *Opportunities in the Indian Defence Sector: An Overview*.

Approximately USD 19 billion was spent on the purchase of aircrafts of different kinds, ~USD 3 billion for missiles and ~ USD 3.5 billion for ships:

Figure-17
India's Major Defence Imports

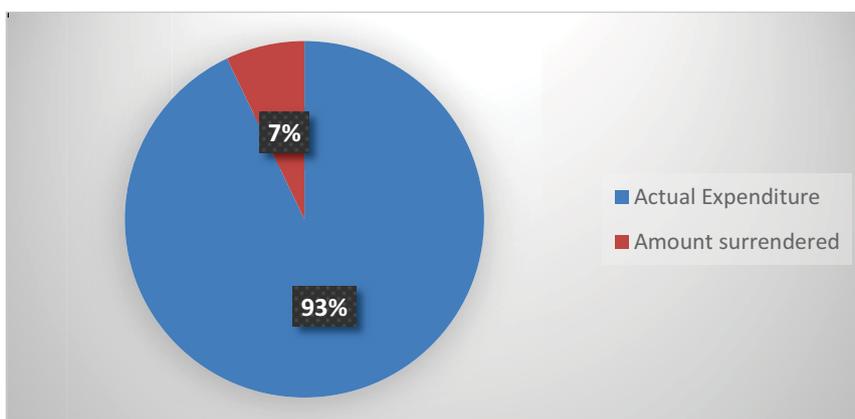


Source: Data collated from the *SIPRI Military Expenditure Database* (1988-2015).⁹⁵

This roughly leaves ~USD 33 billion for indirect imports of items and/or allocations for committed liabilities and ~USD 27 billion for the acquisition of land, infrastructure and procurements of weapons etc. from domestic suppliers. Between 2005-14, INR 427 billion (~USD 6.8 billion) was surrendered to the MoF as unspent, since actual spending was ~USD 90 billion. Figure 18 shows the amount surrendered and actual amount spent of the total capital outlay of the last decade:

⁹⁵ SIPRI, *SIPRI Military Expenditure Database*.

Figure-18
Capital Expenditure (2005-14)



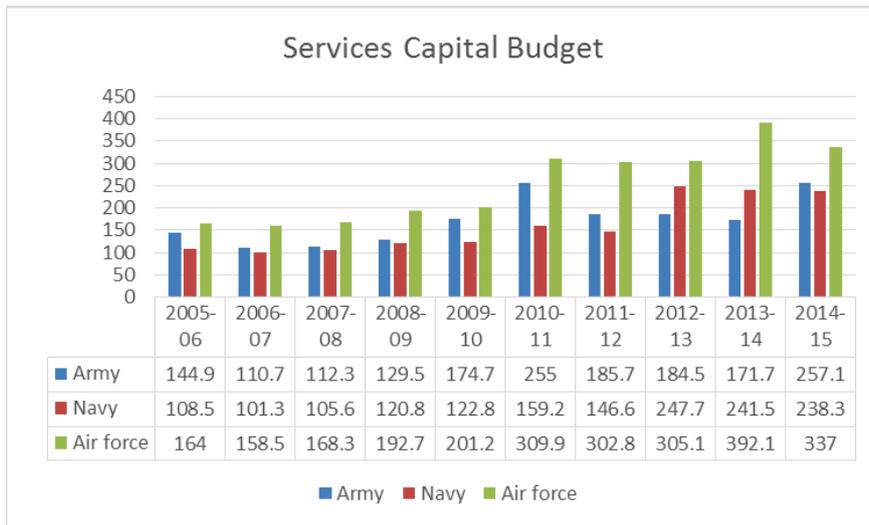
Source: Data collated from the Ministry of Finance budgetary documents (2005-16).⁹⁶

Figure 19 provides the capital expenditures of the three services from 2005-15. Out of 6,016 billion, INR 5850 was allocated for the three services. Historically, the biggest portion of the capital budget was spent on buying arms and equipment for the Army. During the 1970s, the average ratio for capital allocation between the three services was: Army (41 per cent), Navy (42 per cent) and Air Force (17 per cent). However, this trend has now changed substantially. Since 2001, the Air Force and Navy have been allocated bigger share in the modernisation budget.⁹⁷

⁹⁶ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI "Economic Survey"; Ministry of Finance, GoI, <http://finmin.nic.in/>.

⁹⁷ N. Neihial, "Defence Budget as a Strategic Tool of National Security" (comment, Institute of Defence Studies and Analysis, New Delhi, 2008), http://www.idsa.in/idsastrategiccomments/DefenceBudgetasaStrategicToolofNationalSecurity_AKumar_230607.

Figure-19
Indian Military's Capital Expenditure (2005-15)

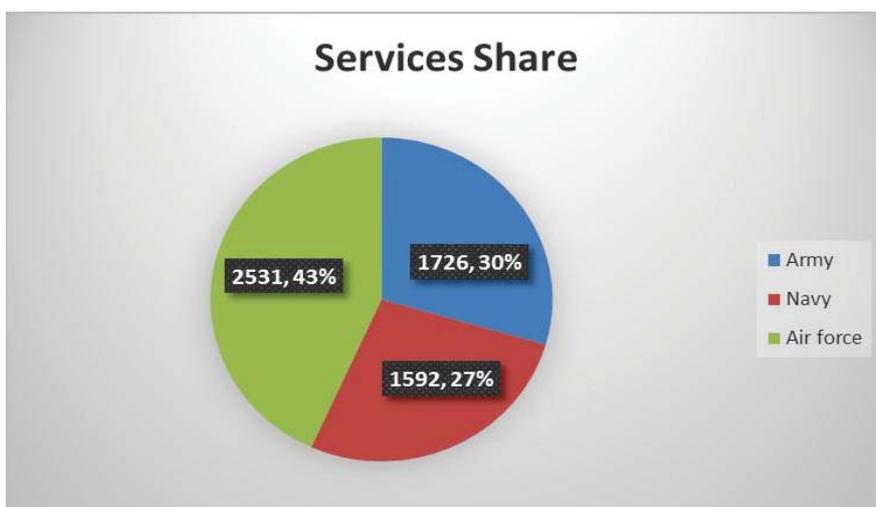


Source: Data gathered from the annual reports of the Ministry of Defence, India⁹⁸ for fiscal years from 2005 to 2015 and compared with data gathered from the official budget documents from Ministry of Finance, India.⁹⁹

⁹⁸ Ministry of Defence, GoI, <http://www.mod.nic.in/#>; Ministry of Finance, GoI, "Union Budget," accessed March 2016, <http://indiabudget.nic.in/>.

⁹⁹ Ibid.

Figure-20
Services Share of Capital Expenditure

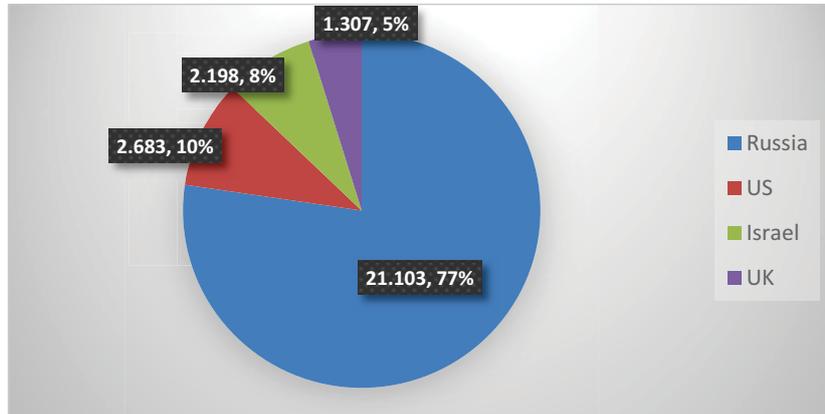


Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹⁰⁰

India has imported military equipment from at least 20 countries as direct imports. However, Russia, US, UK and Israel are its major suppliers. The cumulative data shows that Russia overshadows the other 14 states as the biggest supplier of weapons and related technology. US, Israel and UK emerge as distant second, third and fourth biggest suppliers. Figure 21 shows the four biggest suppliers of arms to India based on the amount spent by India on defence imports:

¹⁰⁰ Ibid.

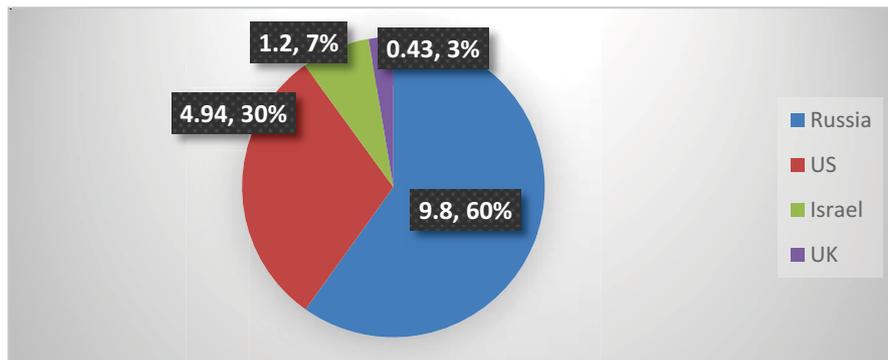
Figure-21
Major Exporters of Defence Equipment to India



Source: Data collated from *SIPRI Military Expenditure Database (1988-2015)*.¹⁰¹

From 2010 onwards, India began to diversify its sources of military equipment. The data is skewed heavily towards Russia for cumulative spending between 2005-14, but data generated from 2010 till 2014 shows that US share jumped 20 per cent points, while Russia's share went down 17 per cent points (Figure 22):

Figure-22
Major Exporters of Defence Equipment to India (2010-14)



Source: Data collated from *SIPRI Military Expenditure Database (1988-2015)*.¹⁰²

¹⁰¹ SIPRI, *SIPRI Military Expenditure Database*

¹⁰² Ibid.

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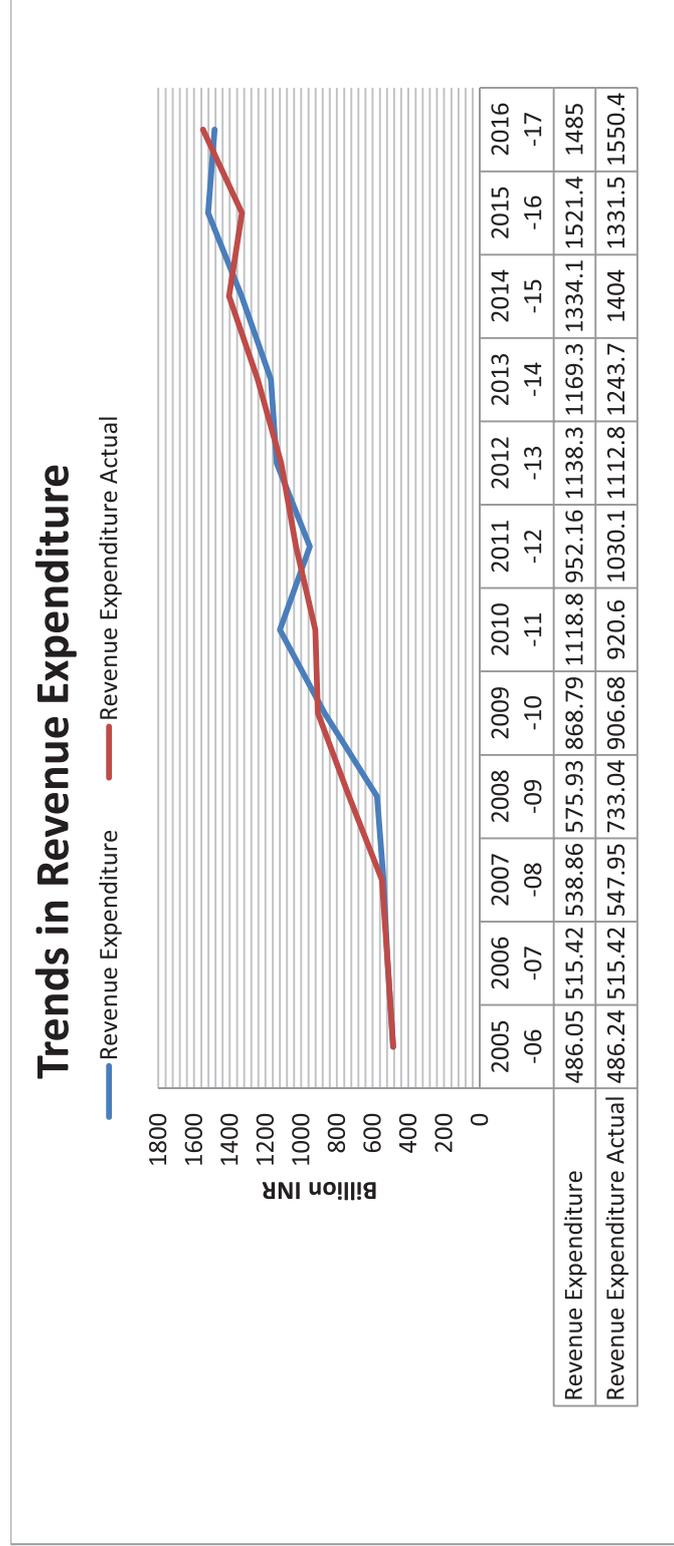
Since the government's decision to increase or decrease its defence funding is based on multiple economic and non-economic factors, the data highlights the extent of burden the Indian governments have been ready to put on the economy for defence expenditures.

Trends in Revenue Expenditure

The general revenue expenditure of India since 2005 has increased threefold in nominal terms from INR 486 billion to INR 1521 billion with an average growth rate of 19 per cent. In sum INR 10219 billion (~ USD 178 billion)¹⁰³ were allocated for revenue expenditure in nominal terms between 2005-15. As mentioned before, a major portion of the revenue budget includes funds for pays and personnel allowances, while the rest provides for transportation, stores, works and other expenditure.

¹⁰³ *OANDA-Historical Currency Converter*, accessed March 2016.
<https://www.oanda.com/fx-for-business/historical-rates>. Based on the average conversion rate of USD from OANDA Corp (2005-15).

Figure-23
Trends in Revenue Expenditure (2005-17)



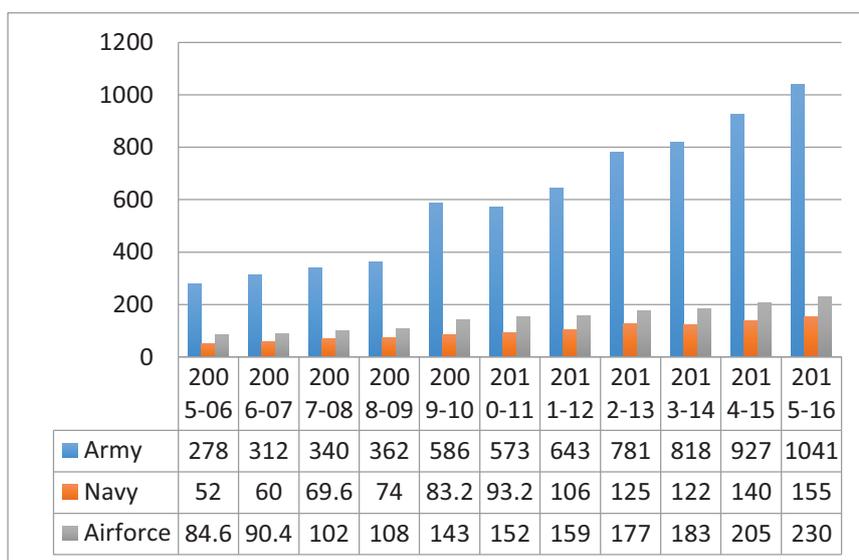
Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹⁰⁴

¹⁰⁴ Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey"; Ministry of Finance, GoI, <http://finmin.nic.in/>.

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As shown in Figure 23, there is difference in the amount allocated and amount actually spent. Between 2005-16, a sum of INR 11704 billion was allocated for the revenue heads of the three services by the MoF. The actual spending was ~INR 11782 billion.

Figure-24
Tri-Services Revenue Budget (2005-16)



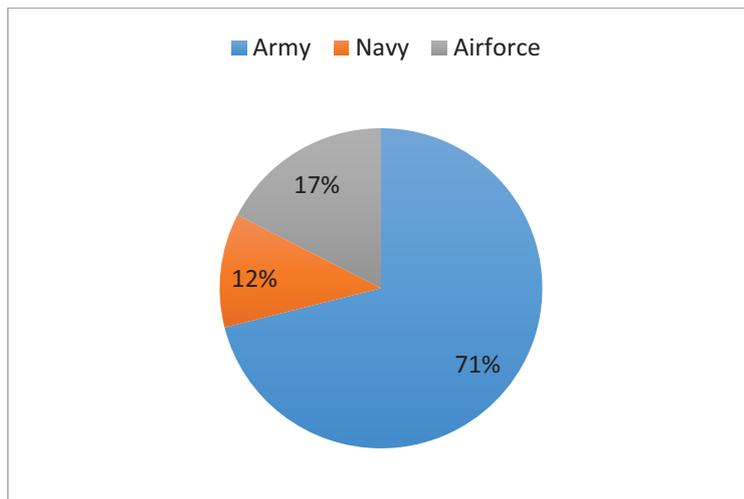
Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹⁰⁵

Figure 24 shows the revenue expenditures between 2005-16: out of the INR 10219 billion, 9377.6 was allocated to the three services. Figure 25 highlights the share of tri-services in the total revenue outlay:

¹⁰⁵ Ibid.

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Figure-25
Revenue Budget of Tri-Services

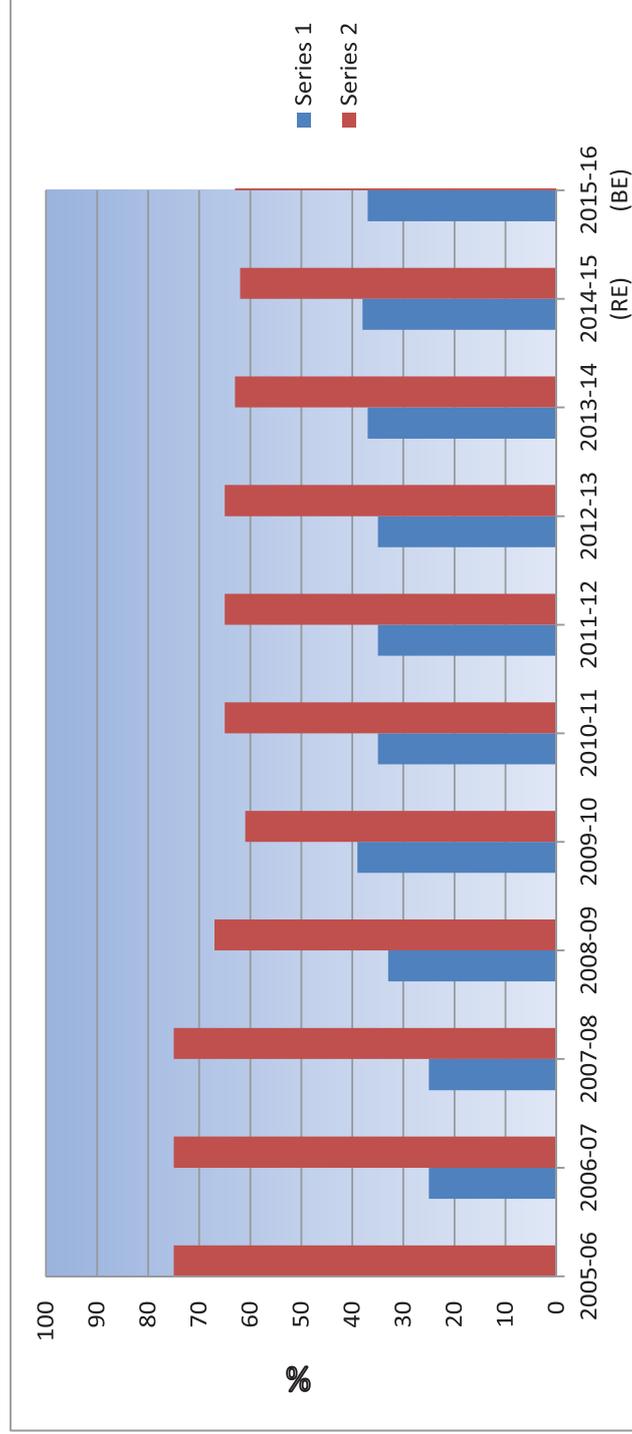


Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹⁰⁶

In terms of personnel, the Army consists 85 per cent of the defence forces. 37 per cent of the total revenue budget is allocated for pays and allowances (P&A) - a major chunk of which is spent by the Army. Figure 26 indicates the budget allocations for P&A over the years:

¹⁰⁶ Ibid.

Figure-26
Share of Pay and Allowances (P&A) of the Armed Forces in
Defence Expenditure



Source: Laxman K. Behera, "All about Pay and Perks: India's Defence Budget 2016-17" (brief, Institute for Defence Studies and Analyses, New Delhi, 2016), http://www.idsa.in/issuebrief/pay-and-perks-india-defence-budget-2016-17-ikbehera_030315.
 Note: Pay and allowances (P&A) include that of Army, Navy, Air Force, Joint Staff, DGSQA, NCC, MF, RR and ECHS. It does not include salary and wages of Military Engineer Services.

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Growth in the P&A head has not been proportionate to growth in the overall defence budget. Before the Sixth Pay Commission P&A constituted approximately 25 per cent of the total defence budget, and nearly 46 per cent of the total revenue budget. It rose to 33 per cent after the Commission. In 2013-14, it constituted 61 per cent of the revenue budget and 36 per cent of the total defence budget. With the Seventh Pay Commission in 2016-17, the P&A budget head is bound to grow disproportionately again. The increase in P&A is not just because of rising salaries and allowances, but also due to expansion in the number of personnel. It is thought that if this trend continues, P&A will soon account for 75 per cent of the revenue budget leaving nominal funds for other major heads, ultimately impacting operational preparedness of the Indian Armed Forces.¹⁰⁷

¹⁰⁷ Ghosh, "Defence Planning in India at Crossroads," 88.

Section III
Doctrinal Evolution, Budget
Growth and Equipment
Modernisation

Section III

Doctrinal Evolution, Budget Growth and Equipment Modernisation

In the 1990s, liberalisation and economic growth enhanced the strategic relevance of India internationally and also provided the space for higher funds for defence. This helped boost confidence of the Indian military. Around the same time, technology-led revolution in military affairs was manifested in Operation Desert Storm¹⁰⁸ which caught the interest of many defence forces around the world. Furthermore, South Asia became home to two nuclear states. These factors instigated the Indian military to modify its doctrines and equipment according to the evolving strategic dynamics of the region.

India has practically distanced itself from Gandhian Pacifism and Nehruvian Practical Idealism.¹⁰⁹ In terms of defence, its military doctrines and capabilities reflect a much more assertive and aggressive India than that of the 1990s. Nevertheless, India's capability to wage its rhetorical 'two-front' war with China and Pakistan simultaneously has been challenged by many national and international scholars and policy analysts.¹¹⁰ It is a generally held view that there is a lack of strategic vision and the vision to effectively utilise the massive military power that India possesses vis-à-vis its goals of coercing its neighbours and to achieve its objectives to emerge as a global power.

India's security problems, threat perceptions and context for a massive defence budget have been discussed previously, this section highlights the correlation of India's decade long drive for weapons modernisation with its threat perception, doctrine(s), and identified strategic goals by the political leadership. The doctrinal evolution,

¹⁰⁸ Editor's Note: When Iraqi leader Saddam Hussein invaded neighbouring Kuwait in early August 1990, and defied United Nations Security Council demands to withdraw from there by mid-January 1991, the Persian Gulf War began with a massive US-led air offensive known as Operation Desert Storm.

¹⁰⁹ Sreeram S. Chaulia, "India's Foreign Policy and the 'Realist Alternative' to the Nehruvian Tradition," *International Politics* 39 (2002): 215-234.

¹¹⁰ Walter C. Ladwig III, "Indian Military Modernisation and Conventional Deterrence in South Asia," *Journal of Strategic Studies* 38, no.5 (2015): 729-772, doi: 10.1080/01402390.2015.1014473.

budgetary allocation and capability enhancement of each of the three services is discussed separately.

Army Modernisation and Budget Growth

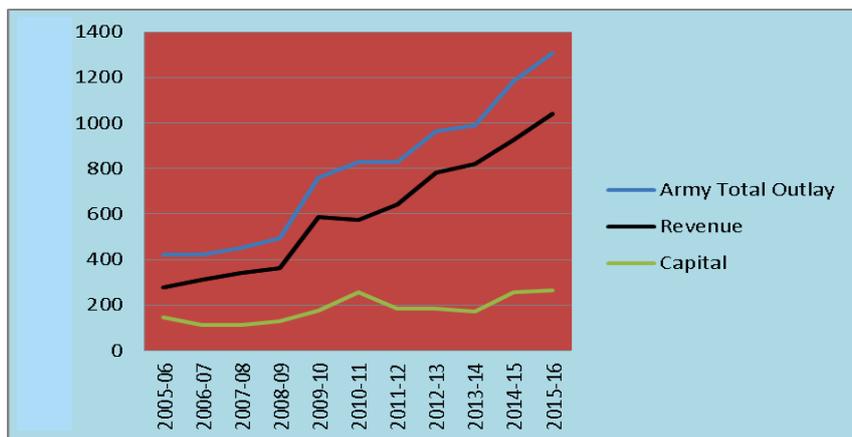
Budget

The Army's modernisation plans are directed by its evolving 'Proactive Defence Strategy' or the oft-mentioned Cold Start Doctrine, growing Chinese assertiveness in the border regions and an obsolete arms inventory. With the changing security environment and inbuilt structural deficiencies many experts suggest that the Army in general needs to develop a force capable of quick deployment with built-in speed, massive firepower and information dominance. To this end, the Army needs to invest in tanks, Armoured Infantry Fighting Vehicles (AIFVs), missiles, artillery and radars. The following paragraphs analyse the Army's budgetary allocations, deployment and arms procurement patterns over the last decade in view of its doctrinal security evolution.

Indian military is approximately 85 per cent Army, 10 per cent Air Force and five per cent Navy.¹¹¹ Since the numerical strength of the Army has increased gradually from 110000 to 1150900 in 2016. Its budget has increased threefold from INR 427 billion in 2005 to INR 1306 billion. As shown earlier, a major portion of the Army's budget in particular is spent on P&A of the troops from the revenue head. The balance of capital/revenue expenditure is heavily tilted towards revenue expenditure, where 77 per cent of the total budgetary allocations to the Indian Army since 2005 has been spent on meeting day-to-day operational needs and salaries. The modernisation budget has hovered around INR 110-266 billion (USD 1.7- 4.2 billion), with a growth rate of 1.4 per cent.

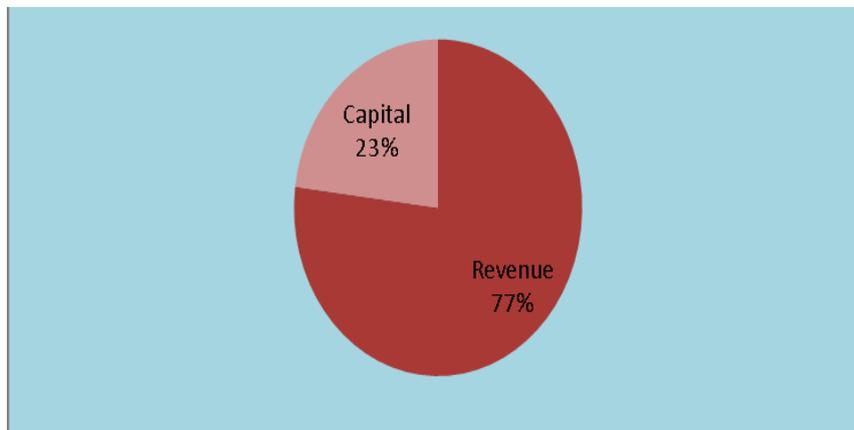
¹¹¹ Behera, "All about Pay and Perks: India's Defence Budget 2016-17."

Figure-27
Indian Army's Budget (2005-16)



Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹¹²

Figure-28
Head- to-Tail Ratio



Source: Ibid.¹¹³

¹¹² Ministry of Finance, GoI, "Union Budget"; Ministry of Finance, GoI, "Economic Survey"; Ministry of Finance, GoI, <http://finmin.nic.in/>.

¹¹³ Ibid.

Doctrinal Evolution

Even though the Army's pre-emptive defence strategy began to take shape after the failure of Operation Parakram, its drive to play a more dominant role in defence policy vis-à-vis Pakistan is not new. There have been at least three phases in the Indian Army's doctrinal and subsequent technological modernisation efforts according to Stephen Cohen. The first phase began with the expansion of Indian Army from ten to twenty five divisions immediately after independence.¹¹⁴ The trend continued slowly, however, the 1962 debacle gave further impetus to expand and modernise the Army. Air Force and Navy were largely ignored, the Navy was treated as a Cinderella sister.¹¹⁵ In the post-1971 scenario, the defence doctrine shaped into defensive defence and deterrence by denial.¹¹⁶

The second phase was during the stint of General Krishnaswamy Sundarji, who was arguably the most ambitious Army General of India. He converted the defence doctrine from defensive defence to conventional counter-offensive and deterrence by punishment.¹¹⁷ Given the changing nature of warfare and Pakistan's imminent nuclear capability, the Army aimed to arrest restraint of the political decision-makers and decapitate Pakistan's nuclear capability. By utilising mechanised armoured forces, the Army envisaged to break Pakistan into two parts near the Rahim Yar Khan sector. This also led to the first crisis between India and Pakistan, namely Brasstacks exercise with a nuclear backdrop. To date, there is still controversy over the actual aims of the exercise. Nevertheless, General Sundarji's doctrine and policy of rearmament was fully backed by the political leadership. During the second phase of modernisation, India procured new tanks, armoured vehicles, missiles, attack helicopters etc. The Bofors howitzers bought during this period ultimately cost Prime Minister Rajiv Gandhi the next election, when a senior cabinet colleague alleged corruption.¹¹⁸ This remained India's strategic doctrine in the

¹¹⁴ Cohen and Dasgupta, *Arming without Aiming*, 54.

¹¹⁵ James R. Holmes, Andrew C. Winner and Toshi Yoshihara, *Indian Naval Strategy in the Twenty-First Century* (Routledge: New York, 2009), 66.

¹¹⁶ Ali Ahmed, "The Interface of Strategic and War Fighting Doctrines in the India-Pakistan Context," *Strategic Analysis* 33, no. 5 (2009): 701-715, doi: 10.1080/09700160903064521.

¹¹⁷ Ibid.

¹¹⁸ "Rajiv Gandhi Wanted Bofors Money to Run Congress: Ex-CBI Chief," *Times of India*, November 14, 2013, <http://timesofindia.indiatimes.com/india/Rajiv-Gandhi-wanted-Bofors-money-to-run-Congress-Ex-CBI-chief/articleshow/25720914.cms>.

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nineties; however, the established conventional superiority of the eighties began to erode due to reductions in the subsequent defence budgets.¹¹⁹

The Twentieth Century in South Asia ended with the nuclearisation of India and Pakistan and Kargil War. Although, the Indian forces were caught off guard during the Kargil War in terms of intelligence and availability of choices to effectively deal with the problem of sub-conventional warfare without disturbing nuclear deterrence, yet the possibility of conventional war under the nuclear overhang got credence. Consequently, this initiated an internal debate for limited war against Pakistan in India.

The New-Delhi based Institute for Defence Studies and Analyses (IDSA) organised a national conference titled 'Dynamics of Limited War: Parameters and Options' in 2000. The country's senior leadership spoke at the conference and highlighted the evolving thought that a limited war was possible in the backdrop of nuclear weapons. The Defence Minister stated:

India had understood the dynamics of limited war after it declared its nuclear weapons status. Nuclear weapons did not make war obsolete but simply imposed another dimension on the way warfare could be conducted.

The Army Chief General VP Malik also said:

We were able to keep Kargil War limited primarily due to nuclear as well as conventional deterrence...Strategy adopted for Kargil, including the Line of Control constraints, may not be applicable in the next war.¹²⁰

These statements were considered the first prominent indicators of India's changing defence doctrines from deterrence by punishment to offensive and preemptive warfare. These statements were considered ill-informed and irresponsible by other Indian strategists given the vague definition of 'Limited War' that highlighted South Asia as a nuclear flashpoint.¹²¹ Nevertheless, the concept of 'Limited Warfare' began to get

¹¹⁹ Shankar Roychowdhury, "The Struggle for Modernisation," in *Officially at Peace*, (New Delhi: Viking, 2002), 256-315.

¹²⁰ Swaran Singh, "Indian Debate on Limited War Doctrine," *Strategic Analysis* 23, no. 12 (2000): 2179-2185, doi:10.1080/09700160008455190.

¹²¹ Ahmed, "The Interface of Strategic and War Fighting Doctrines in the India-Pakistan Context."

traction in South Asia, with support from the political and military leadership of India.¹²²

In wake of the terrorist attacks on its Parliament in 2008, India mobilised and deployed half a million troops on the Indo-Pak border for about a year. The mobilisation time of about three weeks for the Indian forces from their peacetime locations to the borders deprived them of the element of surprise against Pakistani forces that were on their wartime defensive positions a week before the Indian troops were fully deployed. Later, the Operation was considered the most punishing mistake of the Armed Forces.¹²³ With 800 soldiers dead and a cumulative cost of USD 2 billion, a year later India ended its ill-conceived military maneuver. Many Indian strategic analysts concluded that India failed to achieve its stated objectives, and only gained partial and ineffective concessions from Pakistan.¹²⁴ However, the Indian Army continued to look for military ‘solutions’ to the problem of terrorism and sub-conventional warfare through conventional capabilities.

Operation Parakaram was marred with discrepancies ranging from lack of political aim¹²⁵ to availability of a complementing doctrine for the proscribed operations. The two major problems that accelerated Indian Army’s doctrinal modernisation were: 1) Phenomenal time required to mobilise the onerous troop formations from central India to the borders; and 2) absence of choices of action below Pakistan’s nuclear threshold.¹²⁶ Indian Army is generally divided into seven commands and two types of corps based on their roles i.e Holding or Defensive Corps and Strike Corps. The three Strike Corps are deployed in Mathura, Ambala and

¹²² V.R. Raghavan, “Limited War and Nuclear Escalation in South Asia,” *The Nonproliferation Review* 8, no. 3 (2001): 82–98.

¹²³ “Operation Parakram was the Most Punishing Mistake,” *Rediff.com*, November 4, 2011, <http://www.rediff.com/news/slide-show/slide-show-1-nuclear-mindset-we-have-is-a-false-sense-of-security-admiral-sushil-kumar/20111104.htm#1>.

¹²⁴ Ali Ahmed, “Cold Start: The Life Cycle of a Doctrine,” *Comparative Strategy* 31, no. 5 (2012): 453–468, doi: 10.1080/01495933.2012.731964; Joshi, “India’s Military Instrument: A Doctrine Stillborn”; Sumit Ganguly and Michael R. Kraig, “The 2001–2002 Indo-Pakistani Crisis: Exposing the Limits of Coercive Diplomacy,” *Security Studies* 14, no. 2 (2005): 290–324, doi:10.1080/09636410500232958.

¹²⁵ K. Subrahmanyam, quoted in Anit Mukherjee, “The Absent Dialogue,” *Seminar*, accessed March 2016, http://www.india-seminar.com/2009/599/599_anit_mukherjee.htm; Gurmeet Kanwal, “Lost Opportunities in Operation Parakram,” *Indian Defence Review*, December 13, 2011, <http://www.indiandefencereview.com/spotlights/lost-opportunities-in-operation-parakram/>.

¹²⁶ Pant, “Indian Defence Policy at a Crossroads.”

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Bhopal in central India. The Holding Corps mainly comprise of Infantry and Mountain Divisions and armoured and artillery brigades. Seven defensive Holding Corps are deployed closer to the border with Pakistan (Northern, Western and South-Western commands).

Under General Sundarji's doctrine, mobile Strike Corps centered on mechanised and armoured infantry divisions were created, which were called Reorganised Plains Infantry Divisions (RAPIDs). These Corps were created for deep strikes within Pakistan.¹²⁷ The Holding Corps deployed against Pakistan have an optimum offensive potential to cater to Pakistan's defensive offense doctrine and ancillary penetrations. The Holding Corps, however, require reinforcements from the three Strike Corps in case of a war, which causes a firebreak and tedious deployment process denies the element of surprise. Since the pre-nuclear Sundarji Doctrine premised on war of attrition, holding territory and deep strikes within Pakistan, it naturally crossed Pakistan's nuclear threshold. Operation Parakram was launched without due consideration of this basic factor. Even though both India and Pakistan were on an eyeball to eyeball confrontation, Indian policy of deterrence by punishment or compellence lacked credibility.

Two years later (April 2004), the Indian Army announced a new war doctrine called the 'Cold Start Doctrine (CSD)' based on limited goals and timeframe. The doctrine envisaged reorganisation of the Indian army into eight division sized Integrated Battle Groups from the existing three Strike Corps and Pivot Corps by reinforcing the Holding Corps with more firepower and armour.¹²⁸ This reflected Indian Army's desire to move towards maneuver warfare from the traditional attrition and defensive warfare as directed by the changed strategic environment. The fundamental concepts of Cold Start were lethality, mobility and surprise. The T90 or upgraded T-72 tanks formations were envisioned to attack with artillery fire and close air support.

With the new strategic environment, the Indian Army's war aims needed to be updated. The CSD envisions shallow territorial gains mainly for post-conflict political leverage.¹²⁹ It envisages network-centric warfare

¹²⁷ Cohen and Dasgupta, *Arming without Aiming*, 5.

¹²⁸ Walter C. Ladwig III, "A Cold Start for Hot Wars?" *International Security* 32, no. 3 (2007/2008): 158–190.

¹²⁹ Ladwig III, "A Cold Start for Hot Wars?"; Jasjit Singh, "A Security Strategy for the 21st Century," in *Comprehensive Security for an Emerging India*, ed. Kapil Kak (New Delhi: Knowledge World Publishers, 2010), 16.

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and joint operations with the Air Force.¹³⁰ A few commenters have also mentioned breaking the Pakistan Army's war waging potential to be one of its strategic aims. Inclusion of this as an aim of CS would again render the doctrine ineffective by crossing one of Pakistan's vaguely defined nuclear red lines and challenge nuclear deterrence effectively bringing nuclear weapons back into war plans.

One of the assumptions of CSD is that the long deployment times of Indian Army provide the international community, especially the US to mount diplomatic pressure on political leadership. The political leadership's acquiescence to international diplomatic pressures are the main obstructions to India's lack of a military response to sub-conventional threats emerging from Pakistan. Once India becomes capable of mobilisation within 72-96 hours and has acquired the capability to deliver a strategic surprise, its limited war agenda would become more feasible as the international community would not have ample time to respond. However, among other things, the nature of civil-military relations and bureaucracy, defensive mindset of the political elite,¹³¹ and cumbersome procurement process have diluted the momentum for a doctrinal shift. So much so that it never received political approval and eventually the Army Chief in 2010 stated:

I think that "Cold Start" is just a term bandied about by think-tanks and media. It is neither a doctrine nor a military term in our glossary. There is nothing called "Cold Start". As part of our overall strategy, we have a number of contingencies and options, depending on what the aggressor does. In the recent years, we have been improving our systems with respect to mobilisation, but our basic military posture is defensive.¹³²

The public version of the Army Doctrine 2004 never directly mentioned Cold Start. Even 'Limited War' is mentioned just once in a diagram that discusses entire spectrum of conflict from nuclear to sub-conventional. However, the doctrine discusses many benefits that swift

¹³⁰ Ahmed, "Cold Start: The Life Cycle of a Doctrine."

¹³¹ Stephen P. Cohen and Sunil Dasgupta, "The Drag on India's Military Growth" (brief no. 176, Brookings, Washington, D.C., 2010), <https://www.brookings.edu/research/the-drag-on-indias-military-growth/>.

¹³² Chung Min Lee, *Fault Lines in a Rising Asia* (Washington, D.C.: Brookings Institution Press, 2016), 273.

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mobilisation could accrue for India in a conflict.¹³³ At a background press briefing for journalists, one source used the term 'Cold Start' to describe the new thinking on speedy mobilisation so as to allow early use of force in a conflict. This is where the term got its credence.

According to Ali Ahmed, the public posturing for CSD has mainly three aims: prepare public opinion; build pressure on Pakistan's security apparatus by indicating a build-up of Indian resolve and provision to the government, seen as unnecessarily diffident, with the option of military response.¹³⁴ How successful India has been in achieving these aims is widely debated. The current Chief of Army Staff (COAS) Bipin Rawat, however, has broken the norm of denying that such a doctrine exists. He stated in an interview that:

The Cold Start Doctrine exists for conventional military operations. Whether we have to conduct conventional operations for such strikes is a decision well-thought through, involving the government and the Cabinet Committee on Security.¹³⁵

This statement was criticised for India is generally thought to lack capability in terms of equipment, technology and inter-organisational synchronisation to execute the CSD.¹³⁶

The Army raised a new South Western command in 2005 and some of its offensive units like RAPIDs, armoured and mechanised brigades etc. were forward deployed with the Holding Corps. Supporting infrastructure for prospective IBGs built. However, over the last decade since Cold Start was announced, a slow evolutionary process has been in place for modernisation without any evidence of a paradigm shift from the Sundarji Doctrine of the 1980s. Strike Corps are still included in the annual exercises, there is no evidence of a shift towards delegative command and

¹³³ "Indian Army Doctrine 2004," *Headquarters Army Training Command Shimla*, October 2004, accessed March 2016, <https://www.files.ethz.ch/isn/157030/India%202004.pdf>.

¹³⁴ Ahmed, "Cold Start: The Life Cycle of a Doctrine."

¹³⁵ Sandeep Unithan, "We will Cross Again," *India Today*, January 4, 2017, <http://indiatoday.intoday.in/story/lt-general-bipin-rawat-surgical-strikes-indian-army/1/849662.html>.

¹³⁶ Vipin Narang and Walter C. Ladwig III, "Taking 'Cold Start' out of the Freezer?" *Hindu*, January 11, 2017, <http://www.thehindu.com/opinion/lead/Taking-%E2%80%98Cold-Start%E2%80%99-out-of-the-freezer/article17019025.ece>.

control than was in place before. The age limit for tactical command is reduced, but this has created a pressure in the management of higher cadres. The Army is too big in size to be called lean and mean as envisaged by the CSD. At least one observer suggests that Indian Army is pushing for joint warfare, especially based on close coordination with the IAF, but it will resist any change that will affect its leading role in future wars.¹³⁷ The IAF in principle supports the concept of joint operations. Both its doctrines of 1996 and 2012 discuss joint operations, however, IAF 'is more apprehensive about the methodology that may be adopted for development of a joint doctrine rather than the philosophy behind evolving a joint doctrine.'¹³⁸ The IAF has strongly resisted the Army version of 'jointness' and the officials unofficially stated that 'the days are over when IAF could be treated as a high technology artillery regiment.'¹³⁹

In the 80s, the aim of Indian Army doctrine was to preempt an imminent nuclear deterrent of Pakistan by dissecting the country into two parts and embarrassing the Pakistani Armed Forces. The early 90s were spent in recovering from external adventures in Sri Lanka, Maldives etc. and adjusting to a greater involvement in counterinsurgency operations in Kashmir and elsewhere. As mentioned before, the Indian forces were also carefully observing the technology-driven revolution in military affairs exercised by the US and advocated higher defence spending and force modernisation. With the advent of nuclear weapons, the main aims of Indian defence apparatus vis-à-vis Pakistan became even more limited in scope i.e. to deter Pakistan from conducting sub-conventional warfare and compel it to dismantle the alleged proxy war related infrastructure within the country.

In the later part of the last decade, two-front warfare also began to get traction in doctrinal thinking. An emerging Indo-US strategic partnership to contain China's rise culminated in the controversial India-specific waiver from the Nuclear Suppliers' Group (NSG) and India's arms deals worth billions of dollars with the US. Chinese Foreign

¹³⁷ Cohen and Dasgupta, *Arming without Aiming*, 66.

¹³⁸ Vino Anand, "Evolution of a Joint Doctrine for Indian Armed Forces" (Institute for Defence Studies and Analysis, New Delhi, 2000), <http://www.idsa-india.org/an-jul-600.html>.

¹³⁹ Sandeep Dikshit, "IAF Unhappy with War Doctrine," *Hindu*, November 24, 2004, www.thehindu.com/2004/11/25/stories/2004112503051200.htm; and Cohen and Dasgupta, *Arming without Aiming*, 80.

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Ministry termed this as an Asian NATO in the offing.¹⁴⁰ The border disputes between India and China have not been resolved, while the border demarcation agreements signed between 1993-96 are yet to be implemented. China's growing assertiveness in the Indian Ocean and aggressive patrolling in the border regions along the McMahon Line has diverted India's attention to the possibility of two-front war with China and Pakistan. In 2008, the Indian Defence Minister directed the Indian forces to prepare for a two-front war. The two-front doctrine stipulates developing in the medium- to long- term a conventional superiority over Pakistan and a capability to deter and if necessary defend against Chinese aggression simultaneously.¹⁴¹ To this end, India has begun plans for raising one additional mobile mountain Strike Corps of 64000 soldiers that can be deployed quickly against China both in the North-East and North West.¹⁴²

Organisation, Commands and Deployments

There have been structural changes in the formation of the Army. It raised one additional Strike Corps (in 2015) and 2 Holding Corps (in 2009). A major qualitative change has been brought about in terms of maneuver warfare and mobility, where India raised another two RAPIDs in 2015.¹⁴³ Each RAPID is constituted of two mechanised infantry brigades, one armoured brigade, one artillery brigade, one recon and support battalion, one engineering regiment, one signals regiment and dedicated aviation units.¹⁴⁴ After restricting the existing forces Indian Army has changed the composition of mechanised forces. There was only one mechanised brigade in each of the four RAPIDs in 2009, 25 battalions and eight independent brigades for mechanised operations. In 2010, one additional mechanised brigade was included in each RAPID and the eight independent brigades were replaced with two independent mechanised brigades. In 2005, Indian mechanised forces were composed of four brigades and 25 battalions (~8 brigades), while in 2015, its mechanised

¹⁴⁰ Francine R. Frankel, "The Breakout of China-India Strategic Rivalry in Asia and the Indian Ocean," *Journal of International Affairs* 64, no. 2 (2011): 1-17.

¹⁴¹ Ibid.

¹⁴² Ibid.

¹⁴³ International Institute for Strategic Studies, *The Military Balance* (2015).

¹⁴⁴ Bharat Rakshak, Indian Army & Land Forces, "Artillery: Field Formations," October 12, 2006, <http://www.bharat-rakshak.com/ARMY/weapons/artillery/231-Field-Formations.html>; and data collated from *The Military Balance* issues of 2005 to 2016.

forces are constituted of 14 mechanised brigades. RAPIDs have relatively smaller manpower than infantry divisions and are deployed with the Holding Corps in Kota (Punjab) and Bikaner (Rajasthan) and Strike Corps in Sagar (Madhya Pradesh) and Dehradun (Haryana). RAPIDs provide sufficient fire power, armour and flexibility for offensive operations. They have been trained and equipped to adapt in nuclear, biological, chemical (NBC) environments.¹⁴⁵ Four RAPIDs are deployed with Strike or Holding Corps in the Southern, Western and South Western Commands with operational direction towards Pakistan.

Technically, the basic difference between a Strike (offensive) and a Holding (defensive) Corps is the proportion of armour and mechanised forces in it. The Holding Corps deployed in the Southern, Western and South-Western commands have armoured brigades and RAPIDs. While the three Strike Corps are centred on one armoured division and an infantry division and either a RAPID or a mountain division. All the Holding Corps deployed in the Southern, South Western or Western commands have sufficient armoured and/or RAPID units to conduct offensive operations, which is a development in line with the CSD that envisaged transforming Holding Corps into highly mobile pivot corps with enhanced firepower. For example, X Corps is a Holding Corps, however, it is constituted by two RAPIDs, an infantry division, an armoured brigade and an engineering brigade. The RAPID also has one armoured brigade. Thus, X Corps has three armoured brigades, which is about the size of a division. With this amount of fire power and mechanised infantry, X Corps is technically an offensive corps deployed closer to the border with Pakistan at Bhatinda. Similarly, the IX corps which is also a Holding Corps, has three armoured brigades deployed at Yoi-Hemachal Pradesh. Indian Army has three armoured divisions and five independent armoured brigades based on almost 59 tank regiments.¹⁴⁶ In sum, India has 15-17 armoured brigades. Of which at least eight are deployed closer to Pakistan's borders along with the Holding Corps. The rest are deployed with the Strike Corps also poised towards Pakistan.

¹⁴⁵ SASSI, *Three-day International Workshop on Indian Military's Cold Start Doctrine and its Implications for Strategic Stability in South Asia*, report (Islamabad: South Asian Strategic Stability Institute, 2010), 109.

¹⁴⁶ CASS-India, "Half-Track: Can it Challenge Rival Armies?" (New Delhi: Center for Asian Strategic Studies), March 2016, http://www.cassindia.com/inner_page.php?id=40&&task=military.

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With Chinese PLA's modernisation and development of the border infrastructure, India is also strengthening its military formations in the North-East. Two new divisions were raised in 2011-12, in Sakhama, Nagaland (56 Mtn Div) and Misamari, Assam (71 Mtn Div).¹⁴⁷ India has deployed three corps in the Eastern command, which are purely defensive in nature constituted by mountain and infantry divisions. It has 12 mountain divisions; out of which ten are deployed in the eastern and north eastern sectors headquartered at Tezpur-Assam, Dimapur-Nagaland and Sillugri-West Bengal. The Chinese border incursion into Ladakh region in 2013 was termed as the Kargil of Twenty First Century by Bharatiya Janata Party (BJP) leaders.¹⁴⁸ Indian interior ministry reported at least 336 incursions within Indian claimed territory on the Indo-Chinese border.¹⁴⁹ As a consequence, India decided to raise a new mountain Strike Corps.

The XVII Mountain Corps was established in 2014 with its interim headquarters at Ranchi-Jharkhand. In 2013, the UPA government cleared plans for a China-specific offensive corps to be manned by 80-90,000 troops for which INR 640 billion is to be allocated over seven years.¹⁵⁰ However, the BJP government in the defence budget of 2014 cast doubts on the financial feasibility of the new Strike Corps. It is believed that the Army is cannibalising and restructuring its existing assets to develop the new corps.¹⁵¹ The development of Indian Navy into a blue water navy is thought to be a better deterrent against China than a geographically limited offensive mountain Strike Corps. The fate of the newly established XVII corps is too soon to be predicted. However, given the financial crunch, competing modernisation programmes and PLA's potential to mobilise 30 divisions in Tibet,¹⁵² building an effective deterrent against China will be a tedious task for the Army.

¹⁴⁷ Rohit Vats, "Indian Army Disposition in North-East," *VatsRohit Blog*, August 2, 2012, <http://vatsrohit.blogspot.com/2012/08/indian-army-disposition-in-north-east.html>.

¹⁴⁸ "Chinese Incursion may Snowball into Kargil-like Situation: BJP," *Economic Times*, May 1, 2013, http://articles.economictimes.indiatimes.com/2013-05-01/news/38958060_1_chinese-incursions-pakistan-jail-indian-territory.

¹⁴⁹ "Why Border Stand-offs between India and China are Increasing," *BBC News*, September 26, 2014, <http://www.bbc.com/news/world-asia-india-29373304>.

¹⁵⁰ Amit Saksena, "India: XVII Mountain Corps" (New Delhi: Institute for Peace and Conflict Studies, 2014), <http://www.ipcs.org/article/india/india-xvii-mountain-corps-4573.html>.

¹⁵¹ Rajat Pandit, "Fund Crunch Hits Army's New Strike Corps," *Times of India*, April 16, 2015, <http://timesofindia.indiatimes.com/india/Fund-crunch-hits-Armys-new-strike-corps/articleshow/46940064.cms>.

¹⁵² Ibid.

Equipment and Platforms

India's tank inventory has seen a significant change over the decade. In 2005, India had 4168 tanks of which 3978 were Main Battle Tanks (MBTs). Existing inventory of 330 T-90s were planned to be expanded to replace the obsolete Vijayanta and T-55. An agreement was signed between India and Russia to assemble T-90s in India in 2005. The current MBT inventory of India has 900+ T-90s, while the phased out models have been placed in reserves. It had 1925 T-72 in 2005, which has now increased to 1950 and an additional 124 Arjuns, which makes the total 2974+. ¹⁵³ In 2010, Army Chief General Deepak Kapoor stated that the night vision capability of Indian tanks was only 20 per cent. ¹⁵⁴ The current inventory of the T-72s which is the backbone of the armoured corps is almost three decades old, which has remained operational with overhauls and upgrades. In collaboration with the Israeli firm Elop-Elbit, approximately 450 T-72s have been upgraded with improved night vision capability, while an additional 550 upgrades were to be completed in the 2015-16 timeframe. ¹⁵⁵ With the induction of 900+ T-90s and T-72 upgrades, night vision capability has been enhanced to a great extent. The project to develop manufacturing capacity to make 100 T-90s annually was sanctioned in 2003 at the cost of INR 1 billion. This project was completed in 2009-10 by the Ordnance Factories Board. This would help India to phase out the T-72s in its inventory in due course and develop its armoury based on T-90s primarily. ¹⁵⁶ India plans to induct 1640 T-90s by 2020. ¹⁵⁷

Another INR 1 billion project was sanctioned to manufacture 30 Arjun MBTs per year. This project was completed in 2011 and 45 tanks were delivered to the Army. However, 15 were returned later due to

¹⁵³ International Institute of Strategic Studies, *The Military Balance* (2016): 250-255.

¹⁵⁴ Tamir Eshel, "1,600 Indian T-72s Slated for Night Vision Upgrades," *Defense Update*, January 10, 2013, http://defense-update.com/20130110_night_vision_for_1600_indian_t72s.html.

¹⁵⁵ "The Secret of T-72 Main Battle Tank's Improved Night Vision," *Hindu*, February 19, 2015, <http://www.thehindu.com/news/cities/bangalore/the-secret-of-t72-main-battle-tanks-improved-night-vision/article6911932.ece>.

¹⁵⁶ Ministry of Defence, GoI, *Standing Committee on Defence, 16th Lok Sabha, Demands for Grants (2014-2015)*, second report (Government of India, 2014), http://164.100.47.193/lssccommittee/Defence/16_Defence_2.pdf.

¹⁵⁷ "T-90S Main Battle Tank, Russia," *Army-Technology.com*, accessed May 2016, <http://www.army-technology.com/projects/t90/>.

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defects. Currently, India deploys 124 Arjun tanks, which shows that the rate of 30 tanks per annum has been maintained.

Interestingly, Indian Armoured Infantry Fighting Vehicle (AIFV) inventory has decreased by 250 units, which should be an essential element of the mechanised forces. India mainly uses different models of Russian BMP (Boyevaya Mashina Pekhoty) which are all amphibious and some have been upgraded to adapt with an NBC environment.¹⁵⁸ These would be extremely useful to traverse the formidable canal system in the bordering regions of Pakistan and overcome geographical hurdles for the CSD/Proactive Defence Strategy. Even though some upgrades have been made and half of the BMP-I inventory was phased out in 2010, the original plan of the Army was to replace all the obsolete BMP-1 technology by the BMP-II for its mechanised infantry battalions by late 2000s. There still is an inventory of 350 BMP-I, while the number of BMP-II has also slightly decreased. India is indigenously manufacturing the BMP-II, however, the Standing Committee on defence has observed in its different reports that the Ordnance Factory Board has faced difficulties in meeting its targets vis-à-vis BMP-II manufacturing.¹⁵⁹ Half of the APC inventory that was placed in reserves was also phased out in 2010. India now possesses 336+ APCs about the same configuration as 2005.¹⁶⁰ This inventory may not be sufficient for high intensity strikes by the prospective IBGs in a limited time frame.

Instead of modernisation, the artillery has actually depreciated in number (from 12675+ to 9702+) without any significant qualitative improvement or up-gradation. Around 2655 towed guns have been phased out, including 1115 towed guns of 75mm calibre, without any replacement bringing the total number of towed guns down to 2970+ (1350+ 105mm, 520 122mm, 600 130mm and 500 155 mm). The number of self-propelled guns has also decreased significantly from 150+ to 20+. Some improvement has been made in the Multiple Rocket Launcher (MRL) inventory. The total number has increased by 12 units by procuring 300mm Smerch from Russia.¹⁶¹ Since the Bofors scandal, there has been no significant artillery procurement. India has not bought a single

¹⁵⁸ FAS, "BMP-1 Fighting Vehicle" (Washington, D.C.: Federation of American Scientists, 1999), <http://fas.org/man/dod-101/sys/land/row/bmp-1.htm>.

¹⁵⁹ Ministry of Defence, GoI, *Standing Committee on Defence, 16th Lok Sabha, Demands for Grants (2014-2015)*.

¹⁶⁰ Comparison of data in *The Military Balance* issues of 2005 to 2016.

¹⁶¹ *Ibid.*

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howitzer in the last 26 years.¹⁶² It has around 300 Bofors in its kitty, while most of its inventory is obsolete. Tenders were floated for 1580 towed guns, 100 tracked guns and 180 wheeled and self-propelled guns of 155mm/52-calibre. The deal for procurement was cancelled after trials. Similarly, India selected the M777 of the BEA systems, but the deal was cancelled on the final stages due to charges of bribery which also coincided with the planned shutdown of the M777 facilities by BAE system. An agreement was signed with the Soltam of Israel to upgrade the Russian M-46 from 130mm to 155mm. After an initial upgrade of 180 guns, Soltam was also blacklisted and the upgrades were halted.¹⁶³ The artillery modernisation plans are marred with myriad such examples. The expanding infantry formations, especially for maneuver warfare and the newly established mountain Strike Corps would be made redundant due to insufficient artillery.

For information dominance and network-centric warfare, India has to digitise the battlefield and develop capabilities for Early Warning, Information Sharing, Reconnaissance, Surveillance and Target Acquisition. For tactical early warning and ISR, India has inducted approximately 14 Nishant and 12 Searcher MKII since 2005. The air defence capability has not improved from the 2005 level. The SAM inventory has decreased by 200 units due to phasing out of 200 SA-9 Gaskins. However, the number of land radars has increased threefold from 12+ to 38+. These developments can only be qualified as tiny steps towards the goal of information dominance and network-centric warfare.

Indian Army's Directorate General of Information Systems deals with this important element of Non-Contact Warfare. The heart of the system is Command Information Decision Support System (CIDSS) which comprises of Tactical Command Control Communications and Information System (Tac C3I). The Artillery Combat Command and Control System (ACCCS), Battlefield Surveillance System (BSS), Air Defence Control & Reporting System (ADC&RS), Electronic Warfare System (EWS) and Electronic Intelligence System (ELINT). The Tac C3I is to provide state of the art connectivity from the Corps HQ and below. Upward connectivity from Corps HQ to Army HQ is to be provided by the

¹⁶² B. S. Pawar, "Artillery Modernisation: A Reality Check," *Indian Defence Review* 29, no.1 (2014), <http://www.indiandefencereview.com/news/artillery-modernisation-a-reality-check/>.

¹⁶³ "Artillery Modernisation," *Indian Defence Review* 29, no. 2 (2014), <http://www.indiandefencereview.com/news/artillery-modernisation/>.

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Army Strategic Operational Information Dissemination System (ASTROIDS).¹⁶⁴

However, the unit and sub-unit level connectivity still needs attention. The Future Infantry Soldier As a System (F-INSAS)¹⁶⁵ plan should also provide soldiers with sensors, platforms and weapons systems to have more synergised operations. India launched the Operation Shakti to induct tactical command and control elements within the artillery regiments/battalions.¹⁶⁶ About '40 per cent of the artillery units are now equipped with state of the art network systems.'¹⁶⁷

Army aviation was established in 1986 and can be an invaluable asset due to its inherent flexibility, swiftness and firepower for the Proactive Defence Strategy (PDS). Also, it can perform airlift, surveillance and reconnaissance. However, little attention has been paid to modernise this arm in the last ten years. India has reduced the number of its helicopter squadrons from 17 to 14. Nevertheless, the number of utility helicopters available has increased from 150 to 260. It also has inducted three Rudra light attack helicopters. The previously available 12 Lancer light attack helicopters are still in service.

Naval Modernisation and Budget Growth

Budget

Indian Navy is about 4.3 per cent of the total Indian Armed Forces and its total number personnel increased from 55000 in 2005 to 58350 in 2016. In sum, the Navy was allocated around 2921 billion which is 17.4 per cent of the total defence expenditure of India from 2005 to 2015 in nominal terms. Its budget increased more than two-folds over the last decade from

¹⁶⁴ P. K. Chakravorty, "Indian Army: Modernisation and Current Status," *India Strategic*, January 2015, http://www.indiastrategic.in/topstories3648_Indian_Army_Modernisation_and_Current_Status.htm.

¹⁶⁵ B. S. Chauhan, "F-Insas Programme: Future Infantry Soldier as a System - A Reality Check," *Indian Defence Review* 30, no. 2 (2015), <http://www.indiandefencereview.com/news/f-insas-programme-future-infantry-soldier-as-a-system-a-reality-check/>. There were reports in early 2016 that this programme has now been abandoned.

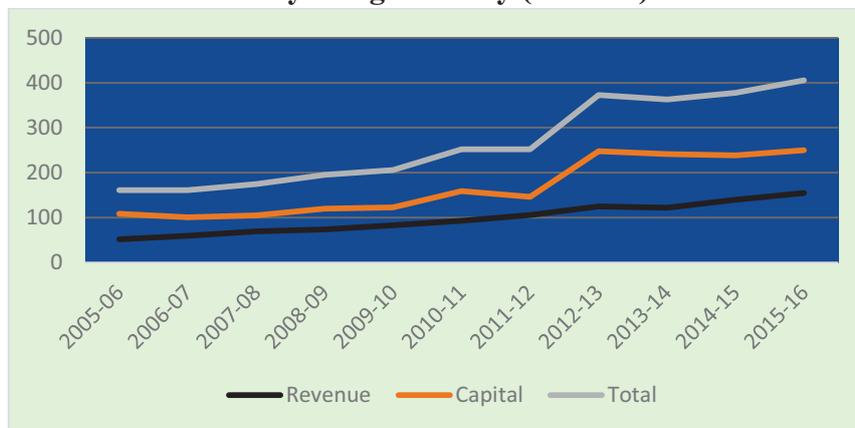
¹⁶⁶ Aditi Malhotra, "Indian Army and Space: Sky is not the Limit" (New Delhi: Center for Land Warfare Studies, 2012), <http://www.claws.in/773/indian-army-and-space-sky-is-not-the-limit-aditi-malhotra.html#sthash.3UhpQyFb.dpuf>.

¹⁶⁷ Chakravorty, "Indian Army: Modernisation and Current Status."

161 billion to INR 405 billion. The annual growth rate of the Navy’s budget has hovered around 15-18 per cent.

Unlike the Army, Navy’s budget is tilted towards capital expenditure. Given its small size, revenue budget of the navy has been lower than the capital budget for all the years studied. In the past few years, the actual growth in Navy’s budget can be attributed more to its capital expenditure as demonstrated by Figure 29:

Figure-29
Navy Budget Outlay (2005-16)

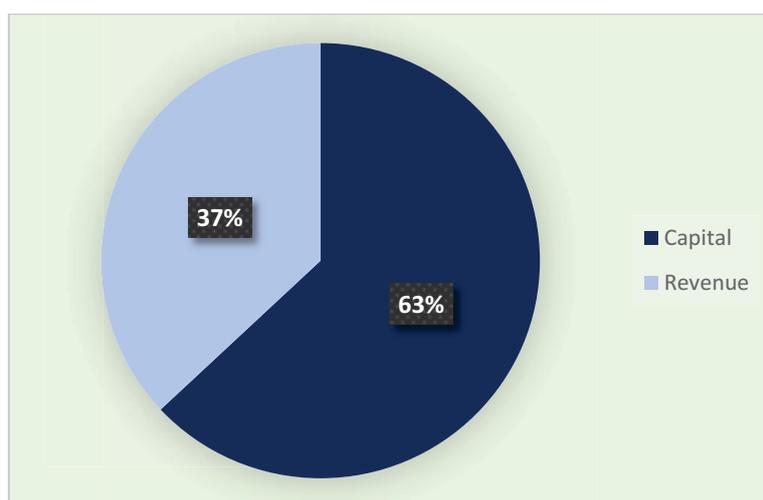


Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹⁶⁸

Out of the total 2921 billion, only 1080 was allocated for revenue and the remaining 1840 was available for capital expenditure. As compared to the Army, the pressure on pays and allowances head is low which allows for a larger allocation for fuel and maintenance, resulting in higher operational preparedness:

¹⁶⁸ Ministry of Finance, GoI, “Union Budget”; Ministry of Finance, GoI “Economic Survey”; Ministry of Finance, GoI, <http://finmin.nic.in/>.

Figure-30
Navy's Capital Revenue Balance

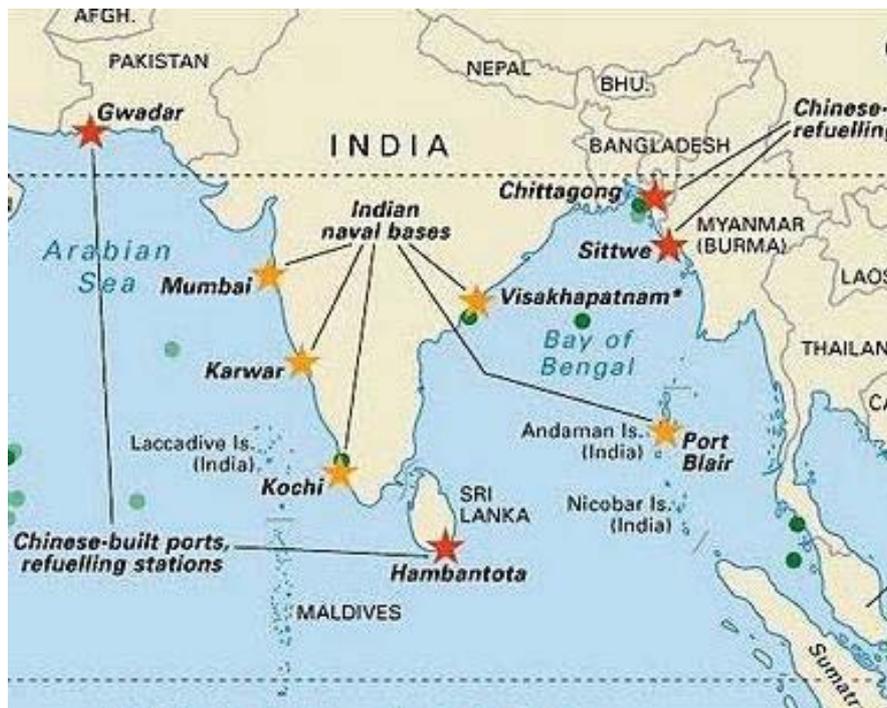


Source: Data collated from the Ministry of Finance budgetary documents (2005-16).¹⁶⁹

The Navy stands much more prominently in the geostrategic planning of India as compared to the 90s and before. India previously had the eighth largest navy in the world which has grown to be the fifth largest today. The Defence Acquisition Council estimated the minimum need for fulfilling the envisaged goals of the Navy to develop a fleet of 140 ships. Since 2005, as directed by its general threat perception and other related goals provided by the various versions of the naval doctrines, India has increased the number of its naval commands from two to four. In 2005, India had only Eastern and Western Fleets headquartered at Vishakhapatnam and Mumbai. A new southern Command was raised in 2005 in Kerala, headquartered at Kochi (Cochin) 660 miles south of Mumbai, giving a big boost to India's power projection plans in the South Indian Ocean. The establishment of the Andaman and Nicobar command in 2009 significantly extended India's presence in East Asia right at the mouth of the Strait of Malacca. The following figure provides the extended areas of influence provided by the Four Naval Commands:

¹⁶⁹ Ibid.

Figure-31
Indian Naval Commands



Source: Robbin Laird and Ed Timperlake, "Indian and American Naval Cooperation: The Potential Role of the P-8," October 17, 2013, *Second Line of Defence*, <http://www.sldinfo.com/indian-and-american-naval-cooperation-the-potential-role-of-the-p-8/>.

India has EES of 2 million sq.kms., 7516 km of coastline and additional 1197 island territories. 90 per cent of the total volume of its trade is done through seas.¹⁷⁰ Traditionally, due to the Nehruvian continental mindset of its leadership, Indian Navy remained a Cinderella service with low budgets and modest goals. This trend began to change in the late 80s with a new emphasis on naval modernisation. However, the trend could not be sustained due to the economic downturn of the 1990s

¹⁷⁰ "India Requires Infrastructure to Match Growth Forecasts, Supply and Demand Chain," *SDC Executive-Supply & Demand Chain Executive*, November 7, 2013, <http://www.sdcexec.com/news/11225816/with-90-percent-by-volume-and-70-percent-by-value-of-indias-international-trade-moving-by-sea-development-of-the-countrys-ports-are-to-be-critical>.

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and lack of a central political aim for the Indian Navy as concluded by the renowned RAND study conducted by George Tanham in 1992.¹⁷¹

Doctrinal Evolution

In the later part of the 90s, all three services came up with their respective doctrines. Indian Navy has published four major Doctrinal Statements since 1998. Since 2004, Indian Naval policy documents had more assertive and offensive overtones inspired by the 'sea power framework' of American Naval strategist Alfred Mahan. It sees itself as a multidimensional force. Naval warfighting is but one of its several roles.¹⁷² There are six basic principles of India's Naval Strategy: increasing spending, expanding infrastructure, modernisation, active maritime diplomacy, conducting naval exercises and deployment in IOR (Indian Ocean Region) and Protecting SLOC.¹⁷³

Additionally, the Indian Maritime Doctrine of 2009 adds six important military roles for its Navy: 1) deterrence, 2) decisive military victory, 3) maintaining territorial integrity, 4) protecting citizens and offshore assets from seaborne threat, 5) influence battle on land, and 6) protecting Sea Lines of Communication and related mercantile interests. The Naval Doctrine emphasises investment in the development of forward power projection capabilities and developing capabilities to influence warfare on land. India currently has six LSTs (Landing Ship Tanks) and capability to transport a brigade size force.¹⁷⁴ These have been mainly used for soft power projection and humanitarian missions.

In the beginning of the 1990s, India initiated its Look East Policy to overcome its economic challenges. Over the years, Look East agenda has been expanded to include security-related issues. Look East was developed through a multipronged strategy to develop institutional linkages for economic and defence engagement with countries like Japan, Vietnam, Australia and Association of Southeast Asian

¹⁷¹ George K. Tanham, *Indian Strategic Thought: An Interpretive Essay* (Washington, D.C.: Rand Corporation, 1992), accessed July 2016, <http://www.rand.org/content/dam/rand/pubs/reports/2007/R4207.pdf>.

¹⁷² James R. Holmes, Andrew C. Winner, Toshi Yoshihara, *Indian Naval Strategy in the Twenty-First Century* (New York: Routledge, 2009), 20.

¹⁷³ Ibid.

¹⁷⁴ Walter C. Ladwig III, "India and Military Power Projection: Will the Land of Gandhi become a Conventional Great Power," *Asian Survey* 50, no. 6 (2010): 1162–1183, <http://users.ox.ac.uk/~mert1769/India%20Power%20Projection.pdf>.

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Nations (ASEAN) countries.¹⁷⁵ The driving factors of India's naval modernisation are its look East Policy and growing Chinese assertiveness in the IOR as much as a desire to project itself as a great power from Straits of Malacca to the Gulf of Aden.

Plans to develop the biggest naval base of India go back to 1985, when the foundation of Project Seabird was laid by the then Prime Minister Rajiv Gandhi. The base was formally commissioned in 2005 at Karwar, 300 km south of Mumbai after completion of phase one. The project was envisaged to be developed in three phases. After completion of the first phase, the base aimed to accommodate 11 warships and an aircraft carrier.¹⁷⁶ The second phase was completed in 2011, however, the base's Ship Lift and Transfer System could not carry platforms weighing more than 10000 tonne. Thus, aircraft carriers could not be docked on the base.¹⁷⁷ In 2015, the third phase of the project was inaugurated by commissioning third naval establishment at Karwar. The INS Vajrakosh would accommodate 50 warships and two aircraft carriers. Underground pens for submarines are also being developed that will enhance their stealth features.¹⁷⁸

Among many others, power projection in the IOR is the most ambitious goals advertised by various maritime strategy documents of India. At the heart of the naval power projection lies the aim to influence events on land as is also proclaimed in the Maritime Strategy Paper of 2007.¹⁷⁹ At bare minimum, India needs aircraft carriers, supported by advanced long-range surface fleet and submarines equipped with anti-ship and Land-Attack Cruise Missiles (LACM) of optimum ranges, a strong maritime surveillance network and patrol aircrafts, and preferably

¹⁷⁵ Danielle Rajendram, "India's New Asia-Pacific Policy: Modi Acts East" (Sydney: Lowy Institute for International Policy, 2014), <http://www.lowyinstitute.org/files/indias-new-asia-pacific-strategy-modi-acts-east.pdf>.

¹⁷⁶ IISS, *The Military Balance* (2005).

¹⁷⁷ G. M. Hiranandani, "Third Naval Base at Karwar," *Indian Defence Review*, March 26, 2012, <http://www.indiandefencereview.com/spotlights/third-naval-base-at-karwar/>.

¹⁷⁸ "Why INS Vajrakosh's Commissioning is BIG Deal," *Rediff.com*, September 10, 2015, <http://www.rediff.com/news/report/defence-news-why-ins-vajrakoshs-commissioning-is-big-deal/20150910.htm>.

¹⁷⁹ Integrated Headquarters, Ministry of Defence (Navy), *Freedom to Use the Seas: India's Maritime Military Strategy* (New Delhi: Ministry of Defence, 2007), <https://www.indiannavy.nic.in/sites/default/files/Indian-Maritime-Doctrine-2009-Updated-12Feb16.pdf>.

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amphibious landing ships. If long-range operations are envisaged, oilers and hospital ships also should be a component of the fleet.¹⁸⁰

Platforms and Weapons

Destroyers, Frigates and Corvettes

Indian Navy has spent huge sums on the modernisation of its surface fleet and aviation, but the number of its principal surface combatants has decreased from 54 in 2005 to 51 in 2016. More than half of the Indian Navy surface fleet is more than 20 years old i.e. 32 out of the stated 51 platforms were inducted 20 years ago or in case of many, more than 30 years ago. However, qualitatively the fleet has notched up as all the ageing corvette/frigates have been mainly replaced with destroyers or guided missile frigates. The number of its destroyers has increased since 2005 from 8 to 12, with the induction of two Kolkata and three Shivalik class destroyers. The Arnala, Nilgiri and Krishna class frigates have been gradually phased out, while one Kamorta class and three more technologically advanced Talwar II class frigates were inducted in 2013 and 2014. Similarly, 1 Vijay, 6 Vibhuti and 2 Veer class corvettes were phased out. Another two Veer class have been modernised and pre-designated as Prabal class corvettes.¹⁸¹ Some of the advanced platforms added to the surface fleet are discussed below.

Under Project 15, three Delhi Class (Delhi, Meysore and Mumbai) stealth destroyers were developed and integrated between 1997 and 2001.¹⁸² The project was initiated in 1977 and all the destroyers were built indigenously by the Masagon Docks Limited based originally on a Soviet design, but later on Western technologies were also incorporated. Project 15 A was approved in 2000 by the Cabinet Commission to develop 6800 tonne, Kolkata class (Kolkata, Kochi and Chennai) destroyers at a total cost of INR 1.74 billion.¹⁸³ It is an upgrade on Project 15. The Kolkata

¹⁸⁰ Walter C. Ladwig III, "Military Power Projection in the Indian Context," *Journal of the Centre for Land Warfare Studies* (Winter 2009): 80-93, http://www.claws.in/images/journals_doc/1399528848Walter%20Ladwig%20CJ%20Winter%202009.pdf.

¹⁸¹ IISS, *The Military Balance*. Analysis of inventories provided in *The Military Balance* between 1995 and 2016 as discussed.

¹⁸² Indian Navy, "Vikramaditya, Viraat, Delhi Class, Rajput Class, Kolkata Class," accessed July 2016, <http://indiannavy.nic.in/content/vikramaditya-viraat-delhi-class-rajput-class-kolkata-class>.

¹⁸³ IISS, *The Military Balance* (2015): 247-253.

and Kochi class have already been inducted in the Navy and the third is scheduled to be delivered. All the Kolkata class have been equipped with the navalised version of BrahMos and have the capacity to carry two Dhruv or Sea King multi-role helicopters. Also, the long-range SAM, Barak-8/NG is jointly being developed by DRDO and Rafael IAI since 2006 and will be fitted on the Kolkata class after the current series of tests. INS Kolkata has been deployed with the Western Fleet at Mumbai.¹⁸⁴ The Kolkata class is the largest (164 m) indigenously built ship in India, with a range of 4500 nm and other specifications comparable to the ones deployed by China and Japan.¹⁸⁵ Project 15B to develop four upgraded Kolkata II class destroyers with enhanced stealth features was commissioned in 2011 to be delivered by 2017. The first (Vishakhapatnam) was launched in 2015. The delivery date of the follow on destroyers has been revised to 2024.¹⁸⁶

Project 17 conceived in late 90s to indigenously build 12 Shivalik class frigates and an additional seven frigates, possibly an upgrade of the Shivalik Class, are to be built under Project 17A.¹⁸⁷ Three stealth frigates of Shivalik class (Shivalik, Satpura and Sahyadri) were built by the Masagon docks at the initial cost of INR 8.1 billion. Production began in 2000. The first of the three frigates INS Shivalik entered service in 2010 and all three are in service currently. Shivalik is 143m long with a displacement of 4500 tonne¹⁸⁸ and is designated as a guided missile destroyer by *The Military Balance* of IISS. All the Shivaliks are fitted with Klub class anti-ship and BrahMos missiles with Barak-I air defence system. Even though the Shivaliks were built indigenously, like the Kolkata Class, it is also a combination of significant foreign and domestic technologies. For example, one reason of delayed induction of the Shivaliks was delayed clearance by the US government to install General

¹⁸⁴ "PM Narendra Modi Inducts India's Largest Indigenously Built Warship INS Kolkata," *Economic Times*, August 16, 2014, http://articles.economictimes.indiatimes.com/2014-08-16/news/52873730_1_ins-kolkata-kolkata-class-masagon-dockyards-limited.

¹⁸⁵ IISS, *The Military Balance* (2016): 225.

¹⁸⁶ "Project 15B Visakhapatnam-Class," *GlobalSecurity.org*, accessed July 2016, <http://www.globalsecurity.org/military/world/india/d-project-15b.htm>.

¹⁸⁷ "India's Project 17-A Stealth Frigates," *Defense Industry Daily*, last modified February 23, 2015, <http://www.defenseindustrydaily.com/india-issues-rfi-for-stealth-frigates-02866/>.

¹⁸⁸ "Shivalik Class Frigates, India," *Naval Technology*, accessed July 2016, <http://www.naval-technology.com/projects/shivalik-class-friga/>.

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Electric's gas turbine engines on it.¹⁸⁹ The cost of each Shivalik Class ship was revised to be INR 26 billion (USD 650 million). In 2009, the Indian Navy signed an agreement with the Masagon Docks and Garden Reach Shipbuilders to develop seven additional Shivalik class frigates (Project 17-A) at a total cost of USD 9.2 billion.¹⁹⁰

Three Talwar Class stealth frigates (Talwar, Trishul and Tabar) were built by Russia and inducted with the Indian Navy between 2001 and 2004. All the three are equipped with ASW helicopters, Klub class anti-ship missiles and Smerch 2 air defence system. In 2006, India signed a deal with Yantar Shipyard to build additional three Talwar-II class frigates (Teg, Tarkash and Trikan) last of which entered service in 2013. All the Talwar-II are equipped with BrahMos supersonic cruise missiles.¹⁹¹

Aircraft Carriers

India currently has two air craft carriers in its fleet and has plans to induct at least one more, a theoretical minimum requirement for developing a Blue Water Navy. INS Vikramaditya is a 45000 tonne ex- Soviet Kiev class air craft carrier, which entered service with the Soviet Navy in 1987.¹⁹² It has a complement of 12 MiG-29K and 6 KA-21 Helix A and KA-31 Helix B ASW helicopters. An agreement was signed between Russia and India to refurbish Admiral Gorshkov (INS Vikramditya) in 2004 at the cost of USD 974 million. In 2010, the cost of the aircraft carrier was unilaterally revised to USD 2.3 billion by Russia. The delivery was intended for 2008 originally, however, modernisation and repair works was expanded beyond the scope of the original contract. This led to delayed delivery in 2012, while some defects were pointed out during the sea trials due to which entry into service was delayed till fall 2013.¹⁹³ The first dry docking and overhaul was planned for late 2016 by the

¹⁸⁹ "Project 17 Shivalik Class Frigate," *GlobalSecurity.org*, accessed July 2016, <http://www.globalsecurity.org/military/world/india/shivalik.htm>.

¹⁹⁰ Ibid.

¹⁹¹ "Talwar Class Guided Missile Frigate, India," *Naval Technology*, accessed July 2016, <http://www.naval-technology.com/projects/talwarclassfrigate/>.

¹⁹² "Admiral Gorshkov (Baku CVHG-103) Aircraft Carrier-Heavy Cruiser Ship," accessed July 2016, http://www.militaryfactory.com/ships/detail.asp?ship_id=Admiral-Gorshkov-Baku-CVHG103.

¹⁹³ Ministry of Defence, GoI, Standing Committee on Defence, *16th Lok Sabha*, Demands for Grants (2014-15).

indigenous/state owned ship building facilities.¹⁹⁴ India's second aircraft carrier INS Viraat was decommissioned in March 2017. Viraat was an ex UK Hermes class aircraft carrier. It had a compliment of six Sea Harrier Jets and Sea King ASW helicopters.¹⁹⁵ After INS Viraat's decommissioning, INS Vikramaditya is the Indian Navy's only aircraft carrier until INS Vikrant comes on line.

The programme to indigenously build an aircraft carrier was sanctioned in 2002. First launch of the ship was planned to be in 2010, however, due to delay in provision of important prelaunch equipment like gear boxes and 3 MW DG sets, the delivery date of the ship was revised to 2018 for sea trials.¹⁹⁶ INS Vikrant is 262m long and displaces 40000 tonnes. It is a force multiplying platform which will be integrated into the Navy's network-centric operations. It has the capacity to station 30 aircrafts and the Navy plans to equip it with a mix of MiG 29K fulcrums and Light Combat Aircraft (Tejas) which are underdevelopment indigenously.¹⁹⁷

In 2015, India's plans to acquire a second Vikrant class aircraft carrier were widely reported. The IAC-2 (Indigenous Aircraft Carrier) is christened INS Vishal, 300m long with displacement of 65000 tonnes. The letter of request by the Navy suggests that the IAC will host 30-35 fixed-wing fighter aircrafts, 20 rotary wing aircrafts and will be propelled by a nuclear reactor.¹⁹⁸ If completed as envisaged Vikrant would be the first non-Western carrier to field the catapult launched and arrest landing system. There are chances of cooperation with the US Lockheed Martin on this project viewing the undergoing broader strategic dialogue and US

¹⁹⁴ Pranav Kulkarni "INS Vikramaditya Set for First Overhaul in September," *Indian Express*, December 8, 2015, <http://indianexpress.com/article/india/india-news-india/ins-vikramaditya-set-for-first-overhaul-in-september/>.

¹⁹⁵ Vishnu Som, "The INS Viraat has Begun its Final Journey," *NDTV*, January 20, 2016 <http://www.ndtv.com/india-news/the-ins-viraat-has-begun-its-final-journey-1268077>.

¹⁹⁶ Ministry of Defence, GoI, Standing Committee on Defence, *16th Lok Sabha*, Demands for Grants (2014-2015).

¹⁹⁷ "India Floats out its First Indigenous Aircraft Carrier INS Vikrant from Cochin," *Defence Now*, accessed July 2016, <http://www.defencenow.com/news/449/india-floats-out-its-first-indigenous-aircraft-carrier-ins-vikrant-from-cochin.html>.

¹⁹⁸ Sachary Keck, "India is Building Second Homegrown Aircraft Carrier," *The National Interest Blog*, July 20, 2015, <http://nationalinterest.org/blog/the-buss/india-building-second-homegrown-aircraft-carrier-13375>.

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growing interest in helping the Indian Navy tip the balance in the Indian Ocean Region.¹⁹⁹

Amphibious Vessels

For amphibious warfare, India has 10 ships including an INS Jalashwa, 4 Khumbir class and 5 *Magar* class. INS Jalashwa is an 8900 tonne, vintage USS Trenton, Landing Platform Dock, which was first commissioned in 1971. It can carry around 1000 troops and 4 Landing Craft Mechanised (LCM). India uses 4 LCM-8 with Jalashwa. Jalashwa was bought from the US in 2007.²⁰⁰ INS *Magar* can carry around 15 MBTs and 500 troops.²⁰¹ INS *Khumbir* are comparably very small landing ships that can carry 100 soldiers.²⁰²

Subsurface Fleet

India currently operates 14 diesel-electric submarines and one Akula Class (INS *Chakra*; Russian *Nerpa*) nuclear-powered submarine. The backbone of its naval fleet is its Russian Kilo class, *Sindhughosh* submarines; five of which have been upgraded to be equipped with six Klub class cruise missiles each. There are plans to equip the remaining five with the Klub missiles too. India also deploys four *Shishumar* class German T-209/1500 midget subs, which were commissioned in 1986. All of them have undergone refits and are deployed at Mumbai with the Western fleet. The *Shishumars* make up the 10th submarine squadron of the Indian Navy.²⁰³

Five tactical *Kursura* class (FSU *Foxtrot*) subs were phased out after 2005 and one of its *Sindhughosh* Kilo class sub (*Sindhurakshak*) sank in its berth after catching fire due to accidental weapons detonations.²⁰⁴ More

¹⁹⁹ Ankit Panda, "This US Technology could Give Indian Aircraft Carriers an Important Edge," *Diplomat*, April 6, 2015, <http://thediplomat.com/2015/04/this-us-technology-could-give-indian-aircraft-carriers-an-important-edge/>.

²⁰⁰ Official Website of the US Navy, "Indian Navy Commissions INS Jalashwa at Naval Station Norfolk," June 22, 2007, http://www.navy.mil/submit/display.asp?story_id=30207.

²⁰¹ IISS, *The Military Balance* (2016).

²⁰² "L 22 *Khumbhir* Class (Sov *Polnocny*)," *GlobalSecurity.org*, accessed July 2016, <http://www.globalsecurity.org/military/world/india/l-kumbhir.htm>.

²⁰³ NTI, "India Submarine Capabilities" (Washington, D.C.: Nuclear Threat Initiative, 2015), <http://www.nti.org/analysis/articles/india-submarine-capabilities/>.

²⁰⁴ Sruthijith Kurupichankandy and Rohit Chandavarkar, "Submarine INS *Sindhurakshak* Sinks after Blasts; Shows Sub-Par Naval Abilities," *Economic Times*, August 15, 2013,

recently, the safety and reliability of India's ageing submarine fleet has been questioned by frequent major and minor accidents, which also led to the resignation of the Naval Chief in 2014.²⁰⁵

In the wake of the ageing Shishumar class, there have been plans to induct new diesel-electric submarines of French Scorpene class since the late 90s (Project 75). However, an agreement was signed only in 2005 to indigenously build six Scorpene class subs with France equipped with Exocet missiles.²⁰⁶ The first submarine under this project was operational by 2012. However, the project has been subjected to delays.²⁰⁷ The Standing Committee of the 20th Lok Sabha noted that according to the revised plan, first Scorpene will be delivered in September 2016 and will be followed by an additional submarine every nine months after that. The first submarine entered sea trials in May 2016 and second was launched in early 2017. Also in 2007, the DAC approved Project 75-I that puts forth plans to build six additional Scorpene class submarines partially in Vishakhapatnam and Collaborator's yard abroad.²⁰⁸ A tender is yet to be floated for Project 75(I). India is also working on developing an indigenous AIP (Air Independent Propulsion System) for its Scorpene class subs. However, plans²⁰⁹ to equip, last two subs of the six Project 75 Scorpene class subs with indigenous AIP system have been shelved. One of the reasons for not floating tenders for Project 75(I) was delays in the development of indigenous AIP system as they were also marked to be equipped with the indigenous AIP technology. This might help to expedite the delayed acquisition process of the next 6 Scorpene class subs.²¹⁰

http://articles.economictimes.indiatimes.com/2013-08-15/news/41413648_1_indian-navy-navy-chief-indian-ocean.

²⁰⁵ Ankit Panda, "Indian Naval Chief Resigns Following Series of Accidents," *Diplomat*, February 28, 2014, <http://thediplomat.com/2014/02/indian-naval-chief-resigns-following-series-of-accidents/>.

²⁰⁶ IISS, *The Military Balance* (2005).

²⁰⁷ Walter C. Ladwig III, "Drivers of Indian Naval Expansion," in ed. Harsh V. Pant, *The Rise of Indian Navy, Internal Vulnerabilities* (Burlington, VT: Ashgate, 2012), 19-40.

²⁰⁸ Anil Jai Singh, "Whither Project 75(I)... and India's Submarine Capability," *SP's Naval Forces*, accessed July 2016, <http://www.spsnavalforces.com/story.asp?mid=40&id=7>.

²⁰⁹ "Scorpene Submarine: Indigenous AIP will Increase Endurance of the Boats Being Built," *Economic Times*, July 19, 2015, accessed July 2016, <http://economictimes.indiatimes.com/news/defence/scorpene-submarine-indigenous-aip-will-increase-endurance-of-the-boats-being-built/articleshow/48133011.cms>.

²¹⁰ Vivek Raghuvanshi, "Indian Navy not to Mount Homegrown AIP on Scorpene Subs," *Defence News*, October 26, 2016, <http://www.defensenews.com/articles/indian-navy-not-to-mount-homegrown-aip-on-scorpene-subs>.

Maritime Aviation

The maritime aviation arm of the Navy has significantly expanded and modernised since 2005. Indian Navy today has a fleet of 47 fighter aircrafts as compared to 15 in 2005. All of its naval ground attack fighters were the British Sea Harriers that were acquired along with the former INS Viraat from UK. Five of the Sea Harriers were phased out and a Squadron of 23 MiG-29 Fulcrums for its aircraft carriers and different ASW aircrafts have been added. An agreement was signed between the US and India to import eight P-8I Neptune for USD 2.2 billion from Boeing in 2009. P-8I is an Indian variant of the US navy's P-8A Poseidon. Five of these have already been inducted in the Indian navy giving a significant boost to its maritime ISR and long-range ASW capability.

Interestingly, the government or the Prime Minister have not directly approved the Naval doctrines of India or its quest for Blue Water Navy. The Indian government never articulated in the form of a strategic document, its wishes to become a regional power or its willingness to deploy force outside its territories.²¹¹ The Navy lacks ability to recover a submarine from Blue Waters. Its efforts to recover the ill-fated Sindhurakshak met serious challenges, even within a well-equipped harbour. Indian Navy will need a great amount of logistic and infrastructure support to be able to conduct operations in blue waters. For the time being its main goal will have to be the protection of SLOC and protection of its boundaries.

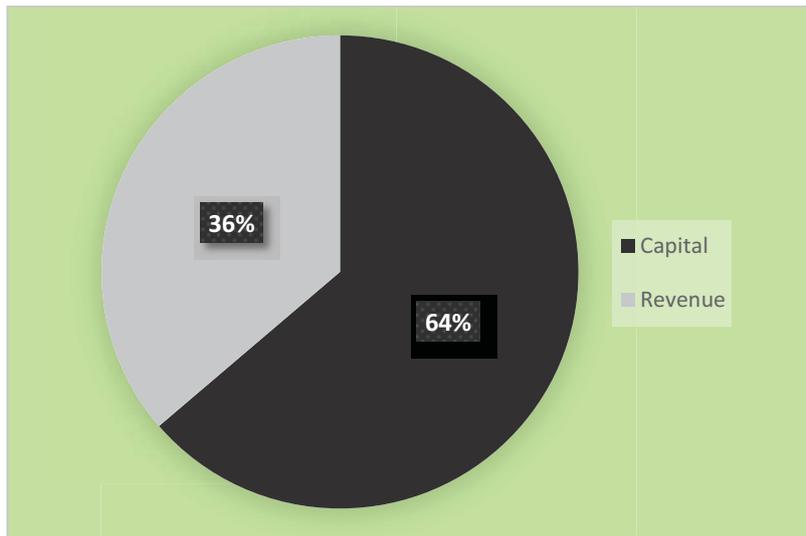
Air Force Modernisation and Budget Growth

Budget

In the last decade, the Air Force's budget has increased twofold from INR 248.6 billion in 2005 to 567 billion in 2015-16. Air Force's manpower was also reduced by 42000. Its total strength stood at 127200 in January 2016. Of the three services, IAF is the most capital (budget) intensive service as shown in Figure 32:

²¹¹ Srinivasapuram Krishnaswamy, "India's Defence Organisation: A Re-Oriented and the Need for Change," in *Core Concerns in Indian Defence and the Imperatives for Reforms*, ed. Vinod Misra (New Delhi: Pentagon Press, 2014), 5, 44.

Figure-32
Indian Air Force Capital Revenue Balance



Source: Data collated from the Ministry of Finance budgetary documents (2005-16).²¹²

Out of INR 4466 billion, only 1634 billion was allocated for revenue and the remaining 2868.6 billion was available for capital expenditure. Like the Navy, the pressure on pays and allowances head is low which allows for a larger allocation for fuel and maintenance etc. resulting in relatively higher operational preparedness (in monetary terms). Figure 33 shows that there is a gradual increase in the revenue head, while capital budget after 2009-10 has fluctuated:

²¹² Ministry of Finance, GoI, “Union Budget”; Ministry of Finance, GoI “Economic Survey”; Ministry of Finance, GoI, <http://finmin.nic.in/>.

Figure-33
Indian Air Force Budget Outlay



Source: Data collated from the Ministry of Finance budgetary documents (2005-16).²¹³

Doctrinal Evolution

In the pre-nuclearised phase, Indian IAF was thought to be a tactical air defence force assuming only supportive roles in wars.²¹⁴ Equipped with state of the art aircrafts, the IAF's potential to play a strategic role in the country's defence policy was not recognised until mid-1990s. The IAF had Mirage 2000s and Jaguars in its inventory which, essentially were multirole aircrafts, yet it did not invest in complimentary electronic warfare systems to convert them into strategic assets. The main roles identified for IAF remained air defence and strike missions against

²¹³ Ibid.

²¹⁴ Zia ul Haque Shamsi, "Indian Air Force Modernisation Plan of 2020: Challenges for Regional Air Forces Pakistan Air Force" (paper, Australian Government, Department of Defence, Canberra, 2012), http://www.defence.gov.au/ADC/Publications/Commanders/2012/04_IAF%202020%20AWC.pdf.

Pakistan, close air support for the Indian Army, airlift, and strategic reconnaissance.²¹⁵

Its role became more pronounced in the post-nuclearisation scenario since aircrafts were the primary resource available to India as a means of delivery of nuclear weapons. All its prospective targets in Pakistan were within the reach of its aircrafts and a conflict with China was also imagined to be contained in certain physical boundaries. This empowered the IAF to develop a proper doctrine and evolve into a moderate air force.²¹⁶ In 1995, the IAF came up with a declared doctrine that emphasised air control and air superiority. It acknowledged deficiencies in terms of force multipliers and depleting number of squadrons. The underpinning motivation behind the doctrine was transition from tactical to strategic operations.²¹⁷ The doctrine highlighted the need for offensive operations, strategic air defence, induction of force multipliers and exploiting space as a continuation of the air medium.²¹⁸ It advocated qualitative improvement and modernisation that would also help to offset the reduction in force levels by inducting aerial refueling, electronic warfare and countermeasures, space based and modern command and control technologies.²¹⁹

With an imminent nuclear dimension to future combats, the Army was envisioning small and swift wars with Pakistan, while the IAF's doctrine emphasised deep strikes and strategic bombardment. Air Force's new doctrine was criticised for its divergence from its previous roles as a support arm for the Army as it was feared that joint operations would get implicated.²²⁰ Later on, IAF had a limited but crucial role during the Kargil War since the scope of operations was limited and horizontal escalation was deliberately avoided. As opposed to the aforementioned concerns vis-à-vis joint ops, the operations of Army and IAF were closely coordinated.²²¹ Besides this criticism, it can be argued that due to the nature of air power it cannot be ignored from a limited war perspective. The element of surprise is fundamental to a limited war and can influence

²¹⁵ Tanham, *Indian Strategic Thought: An Interpretive Essay*.

²¹⁶ Cohen and Dasgupta, *Arming without Aiming*, 77-96.

²¹⁷ Raghavan, "Limited War and Nuclear Escalation in South Asia."

²¹⁸ Shamsi, "Indian Air Force Modernisation Plan of 2020: Challenges for Regional Air Forces Pakistan Air Force."

²¹⁹ Tanham, *Indian Strategic Thought: An Interpretive Essay*.

²²⁰ Raghavan, "Limited War and Nuclear Escalation in South Asia."

²²¹ Benjamin S. Lambeth, "Airpower in India's 1999 Kargil War," *Journal of Strategic Studies* 35, no.3 (2012): 289-316, doi: 10.1080/01402390.2012.665350.

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the outcome of the war if the Air Force is suitably geared. With its attributes of fire power and mobility that land or naval forces cannot match, the Air Force can conduct surprise attacks. In case of a surprise attack on itself, if the Air Force can maintain air superiority it can also reverse tactical advantages of the adversary.

Controlled punitive strikes and surgical strikes became the buzzwords for IAF operations against Pakistan in the next decade.²²² In Table 3 renowned Indian strategist Jasjit Singh assesses the capacity of Indian land, naval and air forces circa 2000 to ensure deterrence by denial and/or punishment vis-à-vis Pakistan. Since then, the Air Force has been modernised qualitatively and quantitatively to a much larger extent:

Table-3
Conventional Deterrence and Force Modernisation

Service	Deterrence by Denial	Deterrence by Punishment
Land Forces	Yes	No
Naval Forces	Yes	Limited
Air Forces	Yes	Yes

Source: Singh, "Dynamics of Limited War."

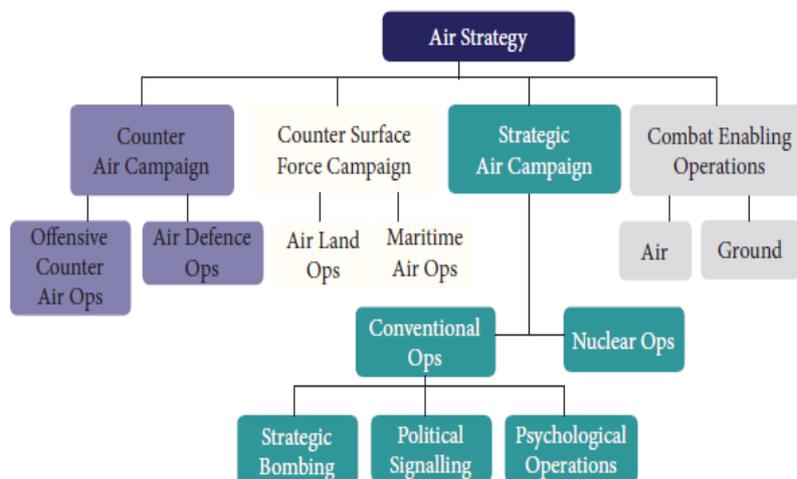
In 2012, the IAF released another doctrine document. The doctrine talks about the concept of jointness and importance of joint operations with other forces. IAF is criticised for planning in a limited scope and redundant scenarios. In somewhat of a similar tone as CSD of the Army, it is advocated that IAF should not be trying to deter a conventional attack from Pakistan, for which Pakistan neither has the capability nor the desire. The actual aim of the IAF should be to tackle Pakistan's nuclear strategy and sub-conventional warfare under the nuclear over-hang.²²³ Instead of amassing superior forces, the doctrine of 2012 emphasised effects-based operations inflicting strategic paralysis on the enemy. Nevertheless, fielding a superior Air Force is important to avoid surprise and maintain

²²² Singh, "Dynamics of Limited War."

²²³ Ramesh V. Phadke, *Air Power and National Security: Indian Air Force: Evolution, Growth and Future* (New Delhi: Pentagon Press, 2015), 163.

favourable asymmetry. Electronic warfare equipment and other force multipliers are a prerequisite for information dominance, battlefield awareness and protection of friendly forces. The doctrine talks about conducting independent and coordinated operations and building capabilities for both. Strategic air campaign (bombing) and countering enemy air campaign are the main independent goals of IAF. Counter-surface force operations are basically tactical air support to friendly forces. Figure 34 shows the main roles that IAF has recently identified for itself in the basic doctrine of 2012:

Figure-34
Air Campaigns and Support Operations



Source: IAF, *Basic Doctrine of the Indian Air Force 2012* (New Delhi: Indian Air Force, 2012), accessed July 2016, <http://indianairforce.nic.in/pdf/Basic%20Doctrine%20of%20the%20Indian%20Air%20Force.pdf>.

The three services now also think in terms of carrying out extra regional operations, as much as guarding the territorial boundaries of the country. In 2006, Air Chief Marshal Tayagi stated that:

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The redrawn strategic boundaries of resurgent India could extend from Gulf to the Straits of Malacca and from Central Asian Republics to the Indian Ocean. The enlarged strategic dimensions necessitate not only a radical change in our strategic thinking but also accentuate the role of Aerospace Power in the new security arena.²²⁴

Organisation, Commands and Deployments

The current number of fighter squadrons of IAF is in flux, as it is in the middle of acquiring new aircrafts and phasing out ageing squadrons. India had the lowest number of squadron aircrafts in 2009, when it phased out its entire fleet of Mig-23s and new inductions were still in the pipeline. There is a variation in the reported fighter squadrons currently deployed by India between 31-37. Based purely on the number of aircraft per squadron, theoretically, India currently possesses 37 squadrons.²²⁵ The *Military Balance* reported the number of IAF fighter squadrons to be 36. However, official sources have stated the current number of deployed squadrons to be 31, while the sanctioned number is 42.²²⁶

For a possible two-front war with Pakistan and China, a minimum of 45 squadrons is thought to be necessary. It has since 2005 invested heavily in aircrafts of various kinds costing approximately 57 per cent of the total defence imports which is around USD 16 billion. Most of this money was spent by the IAF to induct state-of-the-art equipment and platforms. This has led to qualitative enhancement of the fleet by induction of advanced aircrafts like the Su-30 MKI and phasing out of the obsolete aircrafts like B(I) MK 58 Canberra, MiG-23 etc.

The total number of available combat capable aircrafts has risen by 123 from 758 in 2005 to 881 in 2016. However, in 2005 India had a bulk of vintage aircrafts like the MiG-21 and Mig-23, while the current aircraft composition of the fleet reflects an approximately 25 per cent point rise of the Su-30 MKIs. This change is bringing a paradigm shift that was envisaged by the leadership in the early 2000s. By the end of 12th Plan

²²⁴ Air Commodore Shashi Tayagi's statement, quoted in "India to Protect Interests beyond Border," *Dawn*, August 24, 2006; Shamsi, "Indian Air Force Modernisation Plan of 2020: Challenges for Regional Air Forces Pakistan Air Force."

²²⁵ IISS, *The Military Balance* (2010).

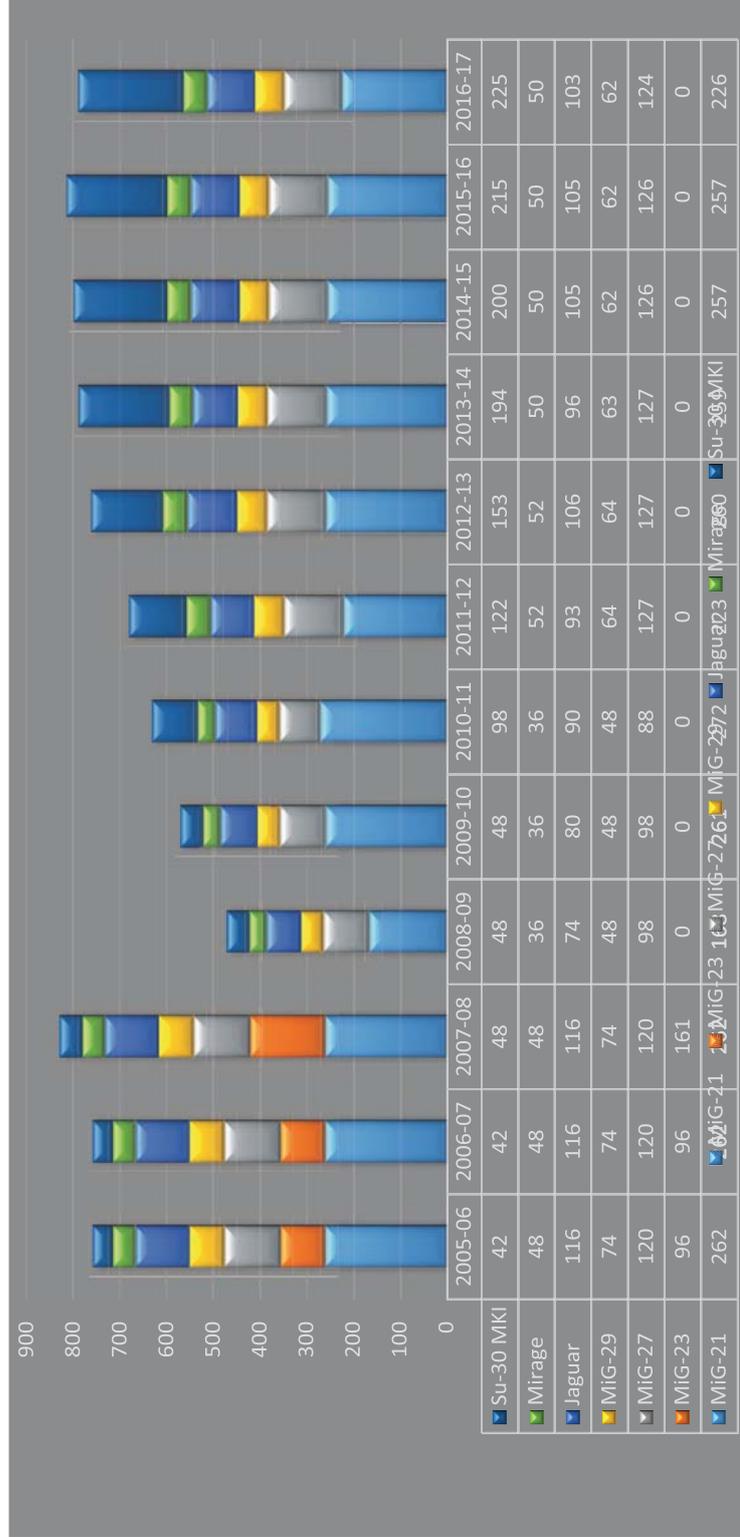
²²⁶ Sudhi Ranjan Sen, "Indian Air Force has only 32 Squadrons - Lowest in a Decade," *NDTV*, February 26, 2016, <http://www.ndtv.com/india-news/indian-air-force-has-only-32-squadrons-lowest-in-a-decade-1281558>.

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period (2012-17), IAF plans to have at least 40 per cent of its combat fleet based on high-tech all-weather multirole platforms like FGFA (Fifth Generation Fighter Aircraft), MMRCA (Medium Multi-Role Fighter Aircraft) and upgraded Su-30MKI. This would further increase to 55 per cent by the end of the 13th Plan and 65 per cent by the end of 14th Plan.²²⁷ The overall make-up of Indian combat capable aircrafts fleet along with alternations in the last decade is provided in the figures below:

²²⁷ NAK Browne, “Air Power and the IAF’s Strategic Transformation” (speech, New Delhi, September 23, 2013), Institute of Defence Studies and Analyses, <http://www.idsa.in/key speeches/AirPowerandtheIndianAirForce>.

Figure-35
Fleet Combination of IAF



Source: Data collated from various editions of *The Military Balance* (2005-16).

Figure 36a: Aircraft Fleet Composition

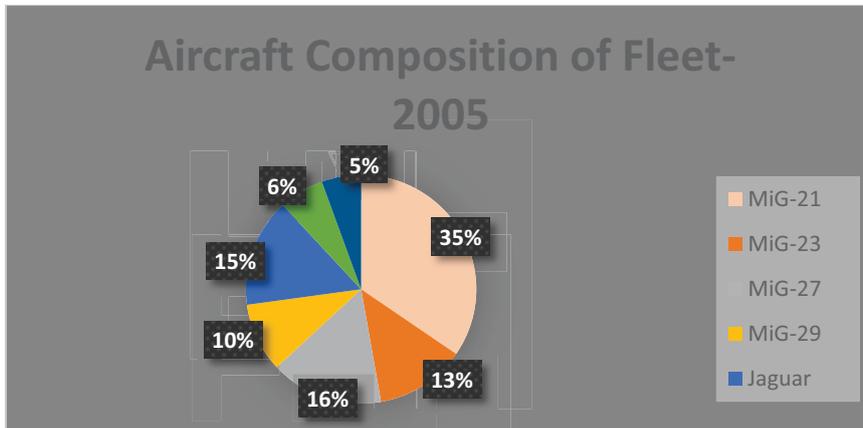
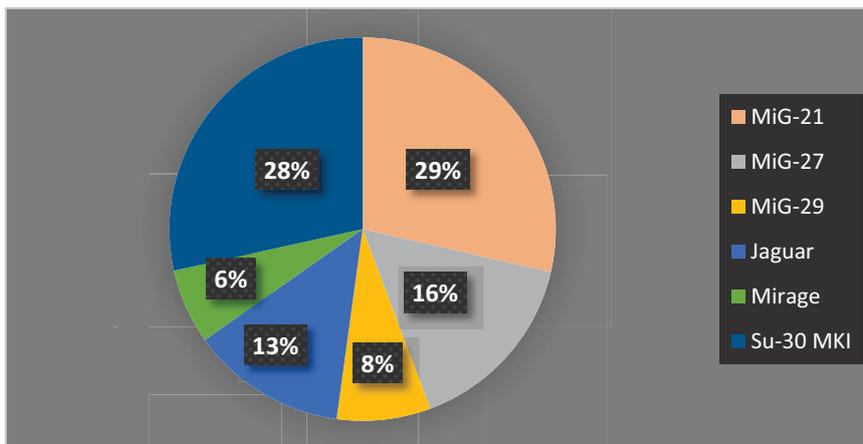


Figure 36b: Aircraft Fleet Composition



Source: Data collated from various editions of *The Military Balance* (2005-16).

In 2005, IAF inducted its first batch of 30 Su-30 MKI Flankers out of the 140 to be produced under license indigenously.²²⁸ In 2011-12, the first two phases of the agreement were completed leading to the third and fourth stage that involves domestic construction from raw material to

²²⁸ International Institute for Strategic Studies, *The Military Balance* (2016).

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ensure technology absorption.²²⁹ Originally, the standard Su-30 MK were imported from Russia, however, later Indian HAL entered in an agreement with Irkutsk Aircraft Production Association to develop the upgraded MKI versions, with thrust-vectoring engines and canard fore-planes. Electronic systems from various countries are used in the MKI versions, radars and ISRT sensors from Russia, heads up display and navigation from Thales of France, electronic warfare system from Israel and some Indian computers and related avionics.²³⁰ Between 2000 and 2005, India developed only two squadrons of Su-30 MKI (42 MKI and 8 Su-30K). Today, it forms the backbone of IAF's multirole aircraft fleet with nine squadrons of MKI Flankers (~ 225 Su-30MKI).²³¹ India plans to induct 272 Su-30 MKIs by 2018.²³²

The Su-30 has an RoA (Radius of Action), much higher than in any other aircraft that IAF has in its inventory and can carry up to 8,000 kg of weapon load.²³³ This includes a range of air-to-surface missiles, including Kh-29, Kh-3, Kh-59M and nuclear capable Nirbhay or BrahMos cruise missiles and R-27R, R-73 and R-77 air-to-air missiles and other standoff weapons. It has a maximum range of 3000 km without refueling and 8000km with air-to-air refueling.²³⁴ It is the most advanced aircraft deployed so far in South Asia. More than three squadrons of the aircraft have been deployed within 150 km from the border with Pakistan in Sirsa-Haryana, Halwara-Punjab and Jodhpur-Rajasthan. Some squadrons have also been deployed with Eastern command in Tespur and Chabua-Assam along the borders with China, Bareilly-Uttar Pradesh and Pune-Maharashtra.²³⁵

²²⁹ Ministry of Defence, GoI, *Standing Committee on Defence, 16th Lok Sabha, Demands for Grants*.

²³⁰ For more details see, "India Ordered, Modernised, Perhaps Regrets Su-30MKIs," *Defense Industry Daily*, July 29, 2015, <http://www.defenseindustrydaily.com/india-ordering-modernising-su-30mkis-05852/>.

²³¹ Analysis of the Indian Capabilities from *The Military Balance* issues of 2005 to 2016.

²³² "India's Eighth Sukhoi SU-30 Combat Jet Squadron by December," *Deccan Herald*, September 26, 2012, <http://www.deccanherald.com/content/281231/indias-eighth-sukhoi-su-30.html>.

²³³ Phadke, *Air Power and National Security: Indian Air Force*, 155.

²³⁴ "Su-30MKI Multirole Fighter Aircraft, India," *Air Force Technology*, accessed August 2016, <http://www.airforce-technology.com/projects/su-30mki-multirole-fighter-aircraft-india/>.

²³⁵ "IAF's Eighth Su-30 MKI Squadron to Come up by December near Indo-Pak Border in Haryana," *Defence Now*, accessed August 2016, <http://www.defencenow.com/news/933/iafs-eighth-su-30-mki-squadron-to-come-up-by-december-near-indo-pak-border-in-haryana.html>.

The pilots flying hours dipped to 120 hours per year due to unavailability of spares as a consequence of over dependence in Erstwhile Soviet Union during the 1990s. IAF has been able to maintain 180 flying hours per year since the last decade.²³⁶ For some time, India has been striving to enhance the serviceability and operational preparedness of its combat aircrafts. A recent agreement with Russia will allow it to get spares within 30 days instead of twelve months for Su-30 MKI. This will help to increase the availability of aircrafts by 75 per cent.²³⁷

60 of India's MiG-29B were inducted between 1986 and 1996 and all its MiG-21s (226) and MiG-27 (164) were inducted in the 1960s and 1970s. In 2005, it had about 74 MiG-29B fulcrums, which were planned to be upgraded along with the refurbishment of its 40 MiG 27 and 125 MiG 21s.²³⁸ In 2012, India signed an agreement with RSK to upgrade its MiG-29 Fulcrums to MiG-UPG standards with advanced radars and cockpit avionics for USD 900 million.²³⁹ In 2013, India signed an agreement with Russia to build a refit and maintenance centre for MiGs in India for USD 40 million. This would allow quick and easy serviceability of its aircrafts increasing their availability.²⁴⁰ It was recently reported that India now plans to phase out three squadrons of its Mig-21 Bisons and MiG-27 Flogger and replace them with one squadron of Su-30 MKI.²⁴¹

It was expected that the indigenous Light Combat Aircraft (LCA) Tejas, would gradually replace numerous MiG variants that need phasing out. Even though the LCA made its first flight in February 2001, its Initial Operational Clearance (IOC) was reached in December 2013. The progress of the indigenous aircraft has been slow and marred by delays. India currently has one Tejas Limited Series Production in its inventory. 40 LCA Tejas fighters have been ordered by the IAF that are now under the process of manufacture at HAL.

²³⁶ Cohen and Dasgupta, *Arming without Aiming*, 79.

²³⁷ Manu Pubby, "India, Russia to Sign Pact on Spares for Su 30 Fleet, Availability could Go up to 75%," *Economic Times*, December 7, 2015, <http://economictimes.indiatimes.com/news/defence/india-russia-to-sign-pact-on-spares-for-su-30-fleet-availability-could-go-up-to-75/articleshow/50075387.cms>.

²³⁸ IISS, *The Military Balance* (2005): 236-240.

²³⁹ IISS, *The Military Balance* (2012): 243-247.

²⁴⁰ "India's Fighter Modernisation: Add MiG-29s to the List," *Defence Industry Daily*, August 29, 2013, <http://www.defenseindustrydaily.com/indias-fighter-modernisation-add-mig29s-to-the-list-updated-01879/>.

²⁴¹ "Three MiG 21, MiG 27 Squadrons to be Phased out by IAF this Year," *Economic Times*, June 28, 2015, <http://economictimes.indiatimes.com/news/defence/three-mig-21-mig-27-squadrons-to-be-phased-out-by-iaf-this-year/articleshow/47849954.cms>.

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Since 2000, the IAF has been interested in replacing MiGs fleet with an MRCA, instead of midlife upgrades. The MiGs have been involved in multiple accidents since the 70s casting doubts on the safety and reliability of these aircrafts. The first Request for Information was issued in 2001 by IAF. In 2007, the government finally cleared to open international bidding for the project to procure 126 MMRCA for USD 6.2 billion at that time (later the price increased to be USD 10 billion). The original plan was to buy 18 ready to fly aircrafts and build the remaining indigenously with 50 per cent off sets and transfer of technology.²⁴² Russia's MiG-35(RAC MiG), Swedish JAS-39 (Gripen), Dassault Rafale (France), American F-16 Falcon (Lockheed Martin), Boeing's F/A-18 Super Hornet and EADS' Eurofighter Typhoon were the main contenders. In 2012, French Dassault's Rafale was selected and the company entered into negotiations exclusively with the Indian government. The cost of each aircraft is about USD 80 million and is expected to stay in service for 40 years.²⁴³ In 2013, the Standing Committee on defence noted the need for INR 150 billion annually to continue the aircraft deal. In 2014, the deal was put on hold due to lack of funds. In 2016, however, India signed an agreement with the French government to buy 36 ready to fly Rafales with 50 per cent off-sets. However, the plan to build the remaining aircrafts indigenously has been suspended. The delivery of the aircrafts is expected in 2018.²⁴⁴

The Mig-21s operational life was extended due to absence of viable options domestically and procurement delays. A similar path will be chosen for the MiG-29, Jaguar and Mirage-2000, which have undergone extensive upgrades in the last decade and all are slated for further upgrades.²⁴⁵ For some time, the Su-30 MKI will be the mainstay of all Indian combat related operations that are being procured in sizeable numbers.

In the past ten years, India's attack helicopter inventory has not changed much, however, the number of squadrons detailed with Mi-25

²⁴² Press Information Bureau, GoI, "Request for Proposal for 126 Medium Multi-Role Combat Aircraft Issued," August 28 2007, <http://pib.nic.in/newsite/erelease.aspx?relid=30522>.

²⁴³ Cohen and Dasgupta, *Arming without Aiming*, 83.

²⁴⁴ "India Confirms Order for IAF's Rafale Deal with France," *Economic Times*, January 4, 2016, <http://economictimes.indiatimes.com/news/defence/india-confirms-order-for-iafs-rafale-deal-with-france/articleshow/50443377.cms>.

²⁴⁵ Ramesh.V. Phadke, "Response Options: Future of Indian Air Power Vision 2020," *Strategic Analysis* 24, no.10 (2001): 1795-1812, doi: 10.1080/09700160108455321.

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and Mi-35 Hind have reduced to two from three.²⁴⁶ There has been a move to induct Boeing AH-64 Apache since many years. An international tender was floated in 2011 and then cancelled in 2012 to acquire 22 Apache attack helicopters. In September 2015, India signed a deal with the US to acquire 15 Chinook heavy-lift helicopters and 22 Apache attack helicopters, worth USD 2.5 billion.²⁴⁷ Both the Mi-25 and Mi-35 are multirole assault helicopters and not purely attack helicopters.²⁴⁸ Apache is thought to be the most lethal helicopter, which has been tested in both the Iraq and Afghanistan war. It can detect 256 moving targets and has an all-weather 24x7 operability.²⁴⁹ Table 4 provides the list of aircrafts available in India's multirole/transport inventory and its helicopters:

Table-4
India's Air Fleet

Year	Mi-8	Mi-17 V	Mi-17	Mi-26 Halo	SA-315B-Cheetah	SA 316B-Chetak
2005-06	43	0	100	10	60	0
2016-17	30	149	80	4	59	40

Source: Based on data collated from various issues of *The Military Balance* (2005-16).

India's transportation aircraft inventory has been transformed, with reduction in the number of its ageing aircrafts like the HS-748 Avro, An-32 and Do-228. On the other hand, it has inducted state-of-the-art heavy

²⁴⁶ Data collated from *The Military Balance* issues of 2005 to 2016.

²⁴⁷ Josy Joseph, "India Signs Deal with Boeing to Purchase Apache, Chinook Helicopters," *Hindu*, September 28, 2015, <http://www.thehindu.com/news/national/india-to-purchase-apache-chinook-helicopters-from-us/article7698989.ece>.

²⁴⁸ Manu Pubby, "Here is Why Apache and Chinook Helicopters are Game Changers for India," *Economic Times*, September 23, 2015, <http://economictimes.indiatimes.com/news/defence/here-is-why-apache-and-chinook-helicopters-are-game-changers-for-india/articleshow/49067786.cms>.

²⁴⁹ "IAF Selects Boeing's Apache Longbow Combat Helicopter," *India Strategic*, October 2011, http://www.indiastrategic.in/topstories1230_IAF_selects_Boeing_Apache.htm.

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lifters like Boeing C-17A Globemaster-III and Lockheed Martin C-130 J Super Hercules.

India signed the USD 1.1 billion deal with Lockheed Martin in 2008 to buy six C-130 J Hercules transport aircrafts meant for special operations. The induction of the aircrafts began in 2011 and all six were inducted in the inventory. One of the C-130 J crashed during a training mission in 2014. This was the second crash of the J-model aircraft in the world. The first batch of the six C-130 Js were deployed on the Hindon Air Base, the largest airbase in Asia.²⁵⁰ India has also signed a deal with Lockheed Martin to buy another six C-130 Js, to be delivered around 2020.²⁵¹ To ensure higher operational readiness of its C-130 J fleet in the Eastern and Western sectors, it is expected that India will deploy its new crafts on the Panagarh airbase in West Bengal.²⁵² The C-130 J at Panagarh, will help to enhance mobility of the Mountain Strike Corps that India is in the process of raising. As a subtle show of strength IAF landed a C-130 J at the Daulat Beg Oldi airstrip in Laddakh. Daulat Beg oversees the Karakoram Highway between Pakistan and China. Given the strategic importance of its location, IAF is likely to develop the airfield to operate fixed wing heavy and medium lift transport aircrafts.²⁵³

India also signed a USD 4.1 billion deal to acquire ten Boeing C-17 Globemaster III heavy lifters, first of which was delivered in 2013. It was possible under the agreement for India to buy another six C-17s under the deal signed in 2011. Due to lengthy procurement procedures, it could not buy them before Boeing announced to close down the production line. Boeing has only one more aircraft left to sell now.²⁵⁴ India remains the biggest buyer of these aircrafts in the world. A C-17 Globemaster III can:

²⁵⁰ "Indian Air Force Investigates C-130J Crash," *Aviation Week*, April 1, 2014, <http://aviationweek.com/military-government/indian-air-force-investigates-c-130j-crash>.

²⁵¹ "India Buys C-130J-30 Hercules for Special Forces," *Defence Industry Daily*, July 22, 2014, <http://www.defenseindustrydaily.com/india-to-purchase-6-c130j-hercules-for-special-forces-02224/#>.

²⁵² "Panagarh: Six Facts about IAF's Latest Hub for C-130J Super Hercules Planes," *Economic Times*, August 6, 2015, <http://economictimes.indiatimes.com/news/defence/panagarh-six-facts-about-iafs-latest-hub-for-c-130j-super-hercules-planes/articleshow/48375234.cms>.

²⁵³ B.K. Pandey, "Historic Landing by IAF C-130J at Daulat Beg Oldie," *SP's Aviation*, no. 9 (2013), http://www.sps-aviation.com/story_issue.asp?Article=1297.

²⁵⁴ Manu Pubby, "IAF Clears Proposal to Buy Three C 17; Boeing Says only One Plane Left to Sell," *Economic Times*, August 17, 2015,

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Take off from a 7,600-ft. airfield, carry a payload of 160,000 pounds, fly 2,400 nautical miles, refuel while in flight and land in 3,000 ft. or less on a small unpaved or paved airfield in day or night. Drop a single 60,000-lb. payload, with sequential load drops of 110,000 lb. and back up a two per cent slope.²⁵⁵

India's current fleet of C-17 provides it strategic airlift capability. IAF currently fields five Early Warning Platforms, three IA-50EI and two Embraer's ERJ-145s. It plans to induct ten more Phalcon AWACS till 2020.²⁵⁶ The government signed a USD 1.1 billion deal with Russia and Israel in 2004 to acquire three A-50 EI Early Warning aircrafts based on the Israeli Phalcon AWACS mounted on the Russian Il-76 heavy lifter aircraft. Three AWACS were delivered to India between 2009-11. In March 2016, the Cabinet Committee on Security cleared a special budget of USD 1.2 billion to purchase two additional Phalcon AWACS from Israel and upgraded Il-76 transport Aircrafts from Uzbekistan.²⁵⁷ The AWACS have significantly improved India's early warning capability against cruise missile and other aerial threats. AWACS are a pivotal technology for future war scenarios based on network- centric operations of the IAF. It monitors huge swathes of airspace, can log radar frequencies, intercept enemy communications, conduct ground surveillance and help integrate command and control.

The EMB-145 is a joint venture between Brazil and India. Brazil's Embraer provided the basic jets, mounted the radar and other electronic systems on the jet and maintains the integration of various systems in the aircrafts. The Indian DRDO has provided the radar. Two aircrafts are under testing and have logged 200 sorties and more than 350 flying

<http://economictimes.indiatimes.com/news/defence/iaf-clears-proposal-to-buy-three-c-17-boeing-says-only-one-plane-left-to-sell/articleshow/48506624.cms>.

²⁵⁵ "C-17 Globemaster III: Delivering India's Military and Humanitarian Airlift Capabilities," *Boeing India*, accessed August 2016,

<http://www.boeing.co.in/products-and-services/defense-space-and-security/boeing-defense-space-and-security-in-india/C-17-Globemaster.page>.

²⁵⁶ Gulshan Luthra, "India Developing AWACS: Boeing 767 or Airbus A330 will be the Platform," *India Strategic*, January 2014,

http://www.indiastrategic.in/topstories3153_India_developing_AWACS.htm.

²⁵⁷ Arie Egosi, "India Approves Funding for two more Il-76 AEW Aircraft," *Flight Global*, March 11, 2016, <https://www.flightglobal.com/news/articles/india-approves-funding-for-two-more-il-76-aew-aircra-423026/>.

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hours.²⁵⁸ Another aircraft is under production presently as reported by the IISS *Military Balance*.

²⁵⁸ "Surya's Chariots: India's AWACS Programmes," *Defence Industry Daily*, March 3, 2016, <http://www.defenseindustrydaily.com/indian-awacs-moving-forward-on-2-fronts-04855/>.

Conclusion

Conclusion

Although the growth of India's defence budget is remarkable, it is not unrestrained because of fiscal constraints rather than the political aim to prevent militarisation of the South Asia region. With a growing economy, India's military is bound to expand with little consideration for the impact this can have on regional security. Despite being situated in the middle of a relatively stable neighbourhood, India today is a much more aggressive state than its founding principles of 'Nehruvian Practical Idealism' and 'Gandhian Pacifism'. Its current force posture reflects a much more assertive India than that of the 1990s.

There is little doubt today that India's significant defence budget is helping expand its military might. This, however, does not settle the debate on the effectiveness of the said military capability in terms of achieving the strategic goals of the country. One of the reasons why India's military capability is not seen as successful is the absence of strategic direction for the massive military it possesses. The ad-hocism of its general strategic policy might be debatable in other arenas, but against Pakistan the Indian Army has always pushed to create practical options of deterrence, compellence and domination. Post-nuclearisation and Kargil War, the Indian Army has relentlessly tried to adapt to sub-conventional threats and the changing capability matrix of Pakistan mainly brought about by the latter's nuclear capability. Nevertheless, India still has a long way to go, in terms of fighting a two-front war with Pakistan and China simultaneously.

General Sundarji in the 1980s transformed the Indian Army's war doctrine from defensive defense to conventional counter-offensive and deterrence by punishment. The current Indian doctrine is a hybrid of both Cold Start and Sundarji doctrine. The massive military modernisation drive has brought it halfway to its quest for the capability to conduct future wars with Pakistan under Proactive Defence or CSD. The CS Doctrine is also debated, 'as a parochial Army effort without the benefit of strong political direction.'²⁵⁹

²⁵⁹ Cohen and Dasgupta, *Arming without Aiming*, 56.

The efforts of the Indian Army over a decade have not brought about the envisaged doctrinal shift due to the nature of civil-military relations and bureaucracy, defensive mindset of the political elite²⁶⁰ and cumbersome international procurement processes.

Over a period of time, the Look East Policy of India has been accentuated with security features. In terms of geo-strategic planning, the Indian Navy is a fundamental force for India. The days of treating the Navy as a Cinderella sister are over. Today, the Indian Navy is the fifth largest in the world, while most of its force goals are still unmet. It does not have half the number of surface combatants envisaged by the Defence Acquisition Council. India is increasingly introducing big-ticket items to its inventory instead of investing in a sustainable force posture, by gradually expanding its naval assets with a healthy mix of capabilities. As discussed, India needs to include stronger, maritime surveillance network and patrol aircrafts, long-range surface platforms equipped with LACMs, and subsurface fleet, along with the aircraft carriers, to build a Blue Water Navy. The qualitative specifications of its aircraft carriers and submarines are wanting if it envisages long-range operations. Increasing the number of naval commands from two to four at key strategic locations like Cochi and Andaman Islands are likely to enhance the Indian Navy's reach beyond the region. It remains to be seen how well India can effectively employ its expanding reach to achieve hard-core military goals. The recent submarine accidents and response operations have exposed the weakness of the Indian Navy. It has a long way to go before it becomes the Blue Water Navy that it aims for. In the current scenario, its main goal seems to be protection of its SLOC and protection of its boundaries.

The major push for doctrinal shift and aircraft modernisation came from the nuclearisation of both India and Pakistan. The ageing fleet and availability of higher resources helped to completely change the outlook of the Indian Air Force and by acquiring a matrix of aircrafts it has, in the last decade. Buying aircrafts is the single most important feature of India's capital budget.

Like the Army, the IAF is also strategically oriented towards Pakistan. The current strategic thinking in India vis-à-vis Pakistan is directed towards conducting quick swift wars with limited aims. The element of surprise is intrinsic to a limited wars strategy. The IAF is geared towards achieving the capability to inflict strategic surprise over

²⁶⁰ Ibid.

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Pakistan in the near future. IAF, in the India-Pakistan scenario, is the only force that can achieve both deterrence by denial and deterrence by punishment. Thus, minor changes in the air balance may bring about huge dividends.

India's defence spending although marred by discrepancies and mismanagements is the highest in the region. Even with all its inefficiencies, this budget will help India become a dominating state in the region. The strategic leverage that Indian military might provide it, transcends the different futuristic scenarios contesting its effectiveness in combat. ■

Annexures

ANNEXURES

Annex-1

India's Macroeconomic Indicators (2005-16)

Fiscal Year	Rate of Inflation	GDP Growth Rate	Fiscal Deficit
2005-06	4.2	9.5 ¹	3.96
2006-07	6.8	9.57	3.32
2007-08	6.2	9.32	2.54
2008-09	9.1	6.72	5.99
2009-10	12.3	8.59	6.46
2010-11	10.5	8.91	4.79
2011-12	8.4	6.69	5.70
2012-13	10.2	4.47	4.90
2013-14	9.5 ²	4.74	4.5
2014-15	10.9	7.4	4.1
2015-16	6.4 ³	7.8 ⁴	3.9

Source: Compiled from UNDP, World Bank, Goldman Sachs and Planning Commission of India datasets.⁵

¹ UNDP, "India Fact Sheet: Economic and Human Development Indicators" (New Delhi: United Nations Development Program, n.d.) accessed December 2015, http://www.undp.org/content/dam/india/docs/india_factsheet_economic_n_hdi.pdf.

² Planning Commission, GoI, accessed December 2016, <http://planningcommission.gov.in/>. Figures collated from the Planning Commission of India's website.

³ World Bank, "World Development Indicators," accessed April 2016, <http://databank.worldbank.org/data/reports.aspx?source=2&country=&series=FP.CPI.TOTL.ZG&period=>. Figures available at WDI.

⁴ "2016 Macroeconomic Outlook," *Goldman Sachs*, accessed April 2016, <http://www.goldmansachs.com/our-thinking/pages/outlook-2016/index.html#forecast>.

⁵ Planning Commission, GoI, "GDP at Current/Constant Prices and % to respective GDP at Market Prices," October 28, 2011, http://planningcommission.nic.in/data/datatable/data_2312/DatabookDec2014%202012.pdf.

Capital and Revenue Heads of India's Defence Budget

Fiscal Year	Capital Expenditure	Capital Expenditure Actual	Percentage of the Total	Percentage Growth	Revenue Expenditure	Revenue Expenditure Actual	Percentage of the Total	Percentage Growth
2004-05		334.82				435.17 RE		
2005-06	343.75	330.75	41.3	2	486.05	486.24 RE	58.6	11.6
2006-07	374.58	344.58	42	13	515.42	515.42 RE	57.9	6
2007-08	419.22	377.05	43.6	21	538.86	547.95 RE	56.3	4.5
2008-09	480	409.18	45.45	27.3	575.93	733.04	54.55	5.1
2009-10	548.79	511.12	38.6	34.1	868.79	906.68	61.3	8.7
2010-11	548.24	620.55	37.2	7.2	1118.8	920.6	58.9	23.3
2011-12	691.98	679.02	42.08	11.5	952.16	1030.1	57.9	3.4
2012-13	795.78	704.99	41.14	17.1	1138.28	1112.76	58.86	10.5
2013-14	867.41	791.25	42.6	23.03	1169.31	1243.74	57.3	5
2014-15	945.87	819.65	42.2	19.5	1334.12	1404.04 RE	57.7	7.2
2015-16	945.88		41.3	15.4	1521.39		58.6	8.3

Source: Data compiled by the author from the Ministry of Finance budgetary documents (2004-16).⁶

⁶ Ministry of Finance, GoI, "Union Budget," accessed March 2016, <http://indiabudget.nic.in/>; Ministry of Finance, GoI, "Economic Survey," accessed March 2016, <http://indiabudget.gov.in/survey.asp>.

Capital and Revenue Budget of India's Three Services

Fiscal Year	Defence Budget (Billion IN)	Revised Estimates/Actuals	Capital Expenditure	Capital Expenditure/ Actual	Revenue Expenditure	Revenue Expenditure Actual
2005-06	830	805	343.75	330.75	486.05	486.24
2006-07	890	855	374.58	344.58	515.42	515.42
2007-08	960	917	419.22	377.05	538.86	547.95
2008-09	1,056	1,142	480	409.18	575.93	733.04
2009-10	1,417	1,418	548.79	511.12	868.79	906.68
2010-11	1,473	1,541	548.24	620.55	1118.8	920.6
2011-12	1,644	1,709	691.98	679.02	952.16	1030.1
2012-13	1,934	1,818	795.78	704.99	1138.28	1112.76
2013-14	2,037	2,035	867.41	791.25	1169.31	1243.74
2014-15	2,240	2,224	945.87	819.65	1334.12	1404.04
2015-16	2,290		945.87	5588.14	1521.39	

Source: Data compiled by the author from the Ministry of Finance budgetary documents (2004- 16).⁷

⁷ Ibid.

Annex-4

India's Armed Forces Budget Growth over Actual Expenditure

Fiscal Year	Army (%)	Navy (%)	Air Force (%)	DRDO (%)
2005-06	14.27	50.86	65.46	55.56
2006-07	7.25	15.62	14.40	3.22
2007-08	14.51	8.21	11.33	9.70
2008-09	7.47	22.80	27.68	6.23
2009-10	31.98	19.49	17.63	10.27
2010-11	-1.61	-5.42	23.39	15.80
2011-12	5.87	-6.90	21.04	1.08
2012-13	14.84	19.93	5.72	7.48
2013-14	8.26	22.81	13.86	8.33
2014-15	19.01	13.23	-6.06	40.70
2015-16	9.39	24.91	5.19	6.85

Source: Data compiled by the author from the Ministry of Finance budgetary documents (2004-16).⁸
Growth rates calculated by the author.

⁸ Ministry of Finance, GoI, "Union Budget," accessed March 2016, <http://indiabudget.nic.in/>; Ministry of Finance, GoI, "Economic Survey," accessed March 2016, <http://indiabudget.gov.in/survey.asp>.

Annex-5

Percentage Allocated to India's Tri-Services of Total Defence Budget

Percentage of Total Budget					
Fiscal Year	Army	Navy	Air Force	Ordinance Factories	DRDO
2005-06	48.53	18.37	26.27	-0.15	6.45
2006-07	47.54	18.13	27.93	-0.22	6.12
2007-08	47.20	18.25	28.15	-0.21	6.13
2008-09	46.61	18.47	28.52	-0.16	6.14
2009-10	53.71	14.54	24.30	0.40	5.98
2010-11	50.23	14.56	27.46	0.69	6.66
2011-12	50.37	15.35	28.10	-0.47	6.23
2012-13	49.93	19.29	24.93	-0.07	5.50
2013-14	48.61	17.84	28.23	-0.25	5.21
2014-15	52.84	16.88	24.20	1.11	6.82
2015-16	57.05	17.69	24.76	1.59	6.27

Source: Data compiled by the author from the Ministry of Finance budgetary documents (2004-16).⁹ Growth rates calculated by the author.

⁹ Ibid.

IPRI Publications

IPRI Publications

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The *IPRI Journal* is a biannual refereed journal enjoying wide circulation in Pakistan and abroad. It is being published since 2001 and consists of research articles on strategic issues and events of regional and international importance with relevance to Pakistan's national policies. Book reviews of latest publications on International Relations and Political Science also feature in the Journal. The *IPRI Journal* is privileged to have been upgraded to category (X) in Pakistan's Social Science journals by the country's Higher Education Commission (HEC).

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