

Defence Inflation Indices for India

*Tejinder Singh**

‘Economic theory suggests that defence equipment is a tournament good, and that to maintain military superiority the equipment needs to be at the cutting edge of what is technologically possible and superior to that of potential opponents.’¹

BACKGROUND

Defence inflation is defined as the average rate of increase in pay and prices of all goods and services making up the Defence Budget after allowing for changes in quality and quantity. This allows pure price movements of defence inputs to be targeted by holding quality and quantity constant.²

The rising cost of defence equipment has been a source of consternation for defence planners across the world, especially in India. It is widely believed that the average price the Ministry of Defence (MoD) in the United Kingdom (UK) pays for goods and services increases at a higher rate, as compared to other sectors of the economy. As per one estimate, defence inflation in UK runs at around 3 per cent higher³ than the GDP deflator.⁴ In India, there exists no such comparison, but it would be fair to expect that defence inflation would be higher than normal inflation, as is the trend universally owing to the unique attributes of the defence industry world over.

* Air Marshal Tejinder Singh is presently posted as Deputy Chief of Air Staff at Air Headquarters.

The Nature of Defence Expenditure

The task profile of the armed forces entails requirement of high-end technology as well as specialised training. The need for ruggedized military-grade equipment, stringent safety requirements, element of secrecy, uniqueness and the overarching competitive requirements, wherein the adversary has to be defeated, *drive the costs up further*.

Commercial Aspects

Lack of competition, monopolistic practices, high cost of R&D, problem of economy of scales, transfer of technology (ToT), Intellectual Property Rights (IPR), logistic challenges, supply chain disruptions, variables in production, statutory duties, are important factors as well. For India, the component of imports in Defence Expenditure gets significantly impacted due to exchange rate variation.

Geo-Political Drivers

The geo-political situation can further escalate costs of equipment especially in conflict scenarios, COVID-19, etc. Russia's invasion of Ukraine has resulted in hikes in European defence budgets. The UK MoD found that the UK defence inflation rate reached 4.1 per cent in 2020–21, considerably higher than the Consumer Price Index (CPI) rate of 0.6 per cent. This meant the average price paid for labour, goods and services was rising at a faster rate for the MoD during that period than for ordinary UK consumers. Defence-specific inflation for Canada has exceeded the CPI for the past 30 years, while inflation rates in the US for certain equipment (including trainer, bomber, attack and fighter aircraft) were considerably higher than the CPI but also the US Department of Defense (DoD) procurement deflator in some years.⁵

General inflation indicators like Wholesale Price Index (WPI) or Consumer Price Index (CPI), deal primarily with common goods—foodgrains, oil, gold, steel etc., that are consumed and procured in large quantities, repetitively and universally. Commodity indices on the other hand deal with specific items like metals, oil etc., and their variations are subsumed in general inflation index that has evolved over years to become an important indicator of national economy. Defence inflation and general inflation are substantively different and hence pegging indices for Defence poses many challenges. Countries like the UK and the US have evolved indices to measure defence inflation and escalation, to provide empirical datum to aid planning, forecasting and estimating Defence expenditure. In addition, the US system

has evolved extensively through many sub-indices and plays an important role in pricing/costing of projects as well.

The impetus on 'atmanirbharta' in the Defence sector by the government is showing results. Various initiatives under 'Make in India' have opened up the Defence sector. Increased Foreign Direct Investment, joint ventures, defence corridors and schemes like iDEX, Make-I, Make-II and Technology Development Fund (TDF) have enabled entry of not just the established major industrial houses but also MSMEs and start-ups. *A framework of pegging inflation in the defence sector, in India would complement the transformation in this sector and would be in line with international best practices for better forecasting, defence planning as well as transparency.*

INTERNATIONAL PRACTICES

United Kingdom

The Select Committee on Defence of the House of Commons, fifth report for session 2007–2008 gives an insight into the need for an Defence Inflation index. The MoD had proposed an increase in the Defence Budget by 2011 by 7.7 bn GBP with an annual real-time increase of 1.5 per cent. This was to cater for induction of two aircraft carriers for the Royal Navy and increase in pay and additional expenditure towards accommodation. In addition to increased funding, the proposal included value-for-money reforms. These reforms were expected to create savings of the order of 2.7 bn GBP by 2011. The aspect of defence inflation was then discussed and the MoD brought out that defence inflation was higher than general inflation. It also emerged that measuring the same was extremely complex, considering the various elements of defence expenditure. The select committee then asked MoD to press ahead with its plans to develop a robust index for defence products and opined that this was vital for allowing real comparisons to be made for effective scrutiny.⁶ Following this, the Price Indices team undertook a two-year project to provide estimates. *The main motivation for the development of a measure of defence inflation was to inform parliamentary and national debate on defence expenditure.*

Usage

The key external users, therefore, include the general public, media, defence industry, academics, the National Audit Office and Parliament (in particular, the House of Commons Defence Committee and Parliamentary Accounts Committee). The defence inflation statistic was published for the first time

in March 2010, covering estimates for 2005–06 to 2008–09. The latest estimates relate to 2015–16 and were published on 26 January 2017. The statistics were published as National Statistics, adhering to protocols on pre-release access.⁷ Figure 1 shows the graphical variation of Defence Inflation with respect to GDP Deflator and Retail Price Index (RPI) based on the last published statistics.

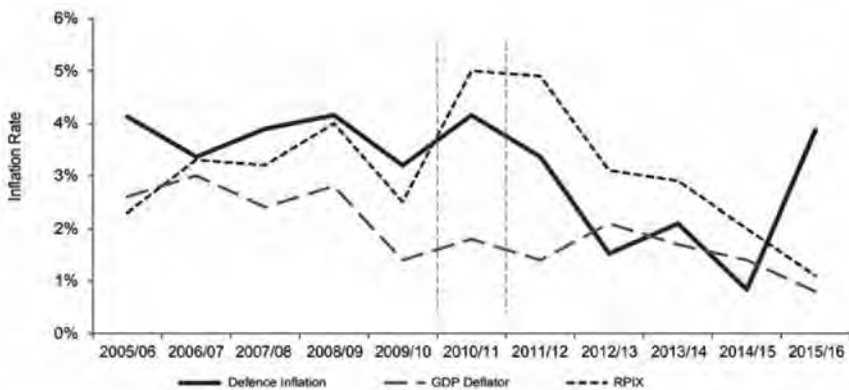


Figure 1 UK Defence Statistics 2005–2015

Source: Finance & Economics Annual Bulletin—Defence Inflation Estimates 2015/16, Ministry of Defence, UK, 26 January 2017, available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/585978/20170126-Defence_Inflation_Statistical_Notice_1516-OS.pdf/, accessed on 13 May 2024.

There is an overall positive feedback on the statistics. The statistics have assisted in government policy-making and monitoring. Labour cost and contract inflation estimates have been developed with clearly outlined assumptions that have facilitated planning. The Department's defence inflation statistics have been used and republished by external users, including the National Audit Office. The statistics have aided academia in their research by providing empirical data. A summary of the methodology used to produce the 2005–06 to 2008–09 statistics in the *Handbook on the Economics of Conflict*, demonstrating how, alongside other measures, the UK MoD pursues effective defence resource management through the estimation of defence inflation. Director General Finance and Permanent Under Secretary can make reference to it in the budget and spending round negotiations with the treasury, and in dealing with parliamentary interest in the Defence expenditure. Defence Equipment and Support Commercial Director can use

the information to measure the effectiveness of commercial policy and the impact of inflation on procurement projects. Defence Resources Director can use the information to inform budget allocation within the Department and MoD Planning Round Assumptions.

Limitations

However, for the defence inflation statistic to be useful for informing Planning Rounds, forecasts of the estimates are required. These forecasts have been produced for internal policy and finance colleagues alongside the assumptions underpinning them, but have not been published as an official statistic. Some known limitations/weaknesses are:

Cost Growth

This is a result of cost or schedule overrun in an MoD project. This apparent cost growth is often an 'accounting problem' or a failure to specify needs accurately, rather than the result of external economic conditions flowing into defence.

Optimism Bias

Over-optimism in initial cost estimates for equipment and support contracts; this is known as optimism bias which may lead to distortion in the forecast indices.

Inter-generational Effects

These are most relevant for defence, wherein the armed forces would opt for a modern platform, which would be more expensive and hence the standard yardstick of inflation would not be applicable. It is estimated that the average of inter-generational cost growth is between 3.5 per cent to 6 per cent.

The publication of 'Defence Inflation Estimates', National Statistics was stopped by the MoD after external consultations.⁸ There was concern on the use of data for cost forecasting/estimating. It was the view of MoD UK that the statistics were suited for reviewing historic trends and making general comparisons with other measures and aren't appropriate for forecasts without further information. Other reasons that were stated were diminished interest in the data in public and Parliament as discerned through hits on the website, parliamentary questions, etc. It is pertinent to point out that 'all' respondents to the consultation 'objected' to cessation of publication of the statistics. It was decided that the resources involved in publishing the data would now be used towards analysis that will be available to MoD in addition to inflation

estimates. Further, elements of this internal analysis would be made available to external users through Freedom of Information requests.⁹ It is pertinent to underscore that Defence Inflation was acknowledged as one of the sources to be used for planning decisions and not the most crucial one.

United States of America

The 2009 Weapon Systems Acquisition Reform Act (WSARA) requires Department of Defense (DoD), Office of Cost Assessment and Program Evaluation (CAPE) to ‘...periodically assess and update the cost (or inflation) indexes used by the Department to ensure that such indexes have a sound basis and meet the Department’s needs for realistic cost estimation.’¹⁰

In the US, inflation was factored in defence planning based on weighted average of indices for military pay, civilian pay, fuel, medical expenditures, and all ‘other purchases’. The bulk expenditure took place in the category of ‘other purchases’ and here it is assumed that prices for Department of Defense (DoD) procurement items will move in accord with prices in the economy as a whole—which is a questionable assumption. The two major uses of these inflation indices in the US are:

- Estimation of future budget requirements in ‘then-year’ dollars.
- Calculation of increases in the cost of systems being acquired in constant (inflation-corrected) dollars, also termed real cost growth. Such calculations are used to identify systems whose real cost growth has breached Nunn-McCurdy¹¹ thresholds.

The need to change the above methodology was felt as it was observed that *costs invariably rose faster than the Comptroller rates*, programmes would be systematically underfunded, leading to unnecessarily high real programme cost growth. ‘Examination of indices for different types of items that DoD buys shows considerable variation. Some prices, like those for electronics, have risen more slowly than the GDP deflator. Some, including vehicles and ships, moved similarly to the GDP deflator. Some perhaps, including aircraft, have risen more rapidly. Alternative aircraft deflators behave very differently: one showing a high rate of price increase and the other hardly any increase. This may reflect differences in the treatment of quality improvements.’¹²

The US defence inflation and escalation indices have evolved over the years and are elaborate and complex. These are available in the open domain and also published in the President’s Budget Green book every year.¹³ Broadly, the intent of defence inflation indices in the US is similar to the UK,

though the methodology as well as legislative control on defence expenditure appears more direct and intricate. All parts of the US DoD are mandated to use the indices. In addition, each service has its own indices to cater for their unique requirements. It is pertinent to point out that there is no single inflation index that is used. Interestingly, it emerges from the US experience that prediction of inflation for five years into the future has been varying by only 0.8 per cent on average.¹⁴ This reinforces the merits of having defence inflation indices.

DEFENCE INFLATION INDEX FOR INDIA

Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it.

– *H. James Harrington*

Current Indices

In India, the Wholesale Price Index (WPI) is published by the Office of the Economic Advisor, which comes under the Ministry of Commerce and Industry. On the contrary, the Consumer Price Index (CPI) is declared by the Central Statistics Office, which works under the Ministry of Statistics and Programme Implementation. WPI estimates inflation by ascertaining the price paid on the purchase of goods by the wholesalers from manufacturers and comparing it with the base year prices. CPI is used to measure the changes in prices, by making a comparison, through time, of the overall price of the fixed basket of commodities. These indices provide the data for financial planning. In 2017, the Office of the Economic Advisor published the Experimental Service Price Index for seven sectors¹⁵—Railways, Banking, Postal Services, Air Services, Insurance Services, Telecom and Port Services—underscoring the need for sectoral indices.

Defence Allocation

Going by the examples of the UK and the US, one can say with reasonable certainty that defence inflation rates in India also would be higher than normal inflation. It is no surprise that there is unanimity amongst the three Services, think-tanks, committees like the Standing Committee on Defence (SCOD), the Shekatkar Committee and NITI Aayog that there is a need to increase defence allocation substantially. Therefore, Defence Inflation Indices

proposed in this commentary would provide an empirical basis for analysing own expenditure patterns and serve as a reference datum for forecasting and working out estimates for effective planning.

Costing in Defence

Existing mechanisms as laid down in GFR 2017, MoF Manuals for Procurement of Goods 2017, Procurement Manual of DRDO 2020, Defence Acquisition Procedure 2020 address this aspect. The Defence Procurement Manual (DPM) 2009 widely covers the basis of costing, comparison of cost, benchmarking and assessment of reasonableness of prices, Discounted Cash Flow Technique (DCF)/Net Present Value Analysis (NPV), Price Indices, etc.,¹⁶ as does the Ministry of Finance's Manual for Procurement of Goods 2017. These have been refined/reviewed from time to time and are based on time-tested principles. For defence acquisition projects the sub-indices once evolved would help peg inter-generational escalation for various weapon systems owing to technological advancements, etc. This would further aid comparison between domestic and international OEMs as also Defence Public Sector Undertakings (DPSUs) serving as an additional input for costing. *It is reiterated that the proposed Defence Indices cannot replace the existing mechanisms/procedures discussed above.*

The Defence Inflation Index for India

An overview of the Study Group Report by the Office of Economic Advisor brings to fore the complexities of working out Production Price Indices (PPIs) for common goods. The process of working out indices is a super-specialised one and for the defence sector it would be much more complex. Additionally, as compared to the UK and the US, many of our capital procurements are through imports or through DPSUs. A lack of competitive local defence industry almost rules out the chances of a natural price-seeking mechanism, as is the case for general goods and services; and benchmarking poses many challenges. A defence inflation index can prove to be good reference over time once a data bank has been established. There is also the problem of variations based on source of procurement as well as geo-political situation. The efficiencies of DPSUs vary significantly as do their unique constraints. Further, there is a large import content in DPSU products as well. Comptroller and Auditor General of India (CAG) has pointed out anomalies in pricing of same items within two DPSUs as well as huge disparities between the forecast

price and actual issue price and profits.¹⁷ *A Defence Inflation Index would help rationalise these anomalies.*

Unlike the UK and the US, where product development is done by the industry in consultation with the MoD/DoD, which ensures customisation as well as fiscal discipline, India has in the past been largely dependent on imports in the defence sector with significant variations in the cost of equipment depending on source of the country. Even 'atmanirbharta' or complete indigenisation especially in complex hardware is still some distance away. Joint ventures, collaborations and ToT would continue to form a major component of our defence production as we step up manufacturing in India. With impetus to atmanirbharta, the landscape of defence industry is expanding. In addition to conventional capabilities, there is rapid growth in many dual-use sectors like aviation, space, drones, etc. The record defence exports this year are steps towards making India a credible player in international defence industry as well. An empirical framework to estimate defence inflation will assist monitoring and policy formulation. It will also aid ensuring VFM in defence expenditure, enable research and provide transparency as per international norms.

WAY AHEAD

It is proposed that the Defence Inflation Index comprising a set of sub-indices catering to various facets of defence expenditure be evolved for India. The indices should differentiate between Capital and Revenue expenditure and cater for major categories of hardware (aircrafts, ships, missiles, tanks, etc.) and also factor the origin and technology involved.

A study group may be formed by the MoD to evolve an Index for the Defence Services. It must include domain experts from the Financial Planning Divisions of HQ IDS and the three services, 'Controller General of Defence Accounts (CGDA) under MoD (Fin) and office of the Cost Adviser, MoD'. As a first step, the indices may be kept classified and after due clarification an experimental set of indices may be evolved. This would generate debate through academic scrutiny and help in drawing macro inferences related to performance of industry and international trends, which could aid our own policy-making and defence planning.

NOTES

1. N. Davies, A. Eager, M. Maier and L. Penfold, 'Intergenerational Equipment Cost Escalation', Defence Economic Research Paper, Ministry of Defence, UK, p. 4,

- available at https://assets.publishing.service.gov.uk/media/5a7b867ce5274a7202e17ba1/18_december_2012.pdf, accessed on 13 May 2024.
2. 'Defence Inflation Estimates Statistical Notice 2009/10', Ministry of Defence, UK, 29 September 2010, available at <https://assets.publishing.service.gov.uk/media/5a75911540f0b6397f35f67c/2009-10.pdf>, accessed on 13 May 2024.
 3. *Ibid.*
 4. The GDP deflator is a measure of price inflation. It is calculated by dividing Nominal GDP by Real GDP and then multiplying by 100 (based on the formula). Nominal GDP is the market value of goods and services produced in an economy, unadjusted for inflation. See 'Measuring Output and Income', Course Sidekick, available at <https://courses.lumenlearning.com/boundless-economics/chapter/comparing-real-and-nominal-gdp/>, accessed on 13 May 2024.
 5. 'Military Expenditure: Transparency, Defence Inflation and Purchasing Power Parity', The International Institute for Strategic Studies, December 2022, available at <https://www.iiss.org/globalassets/media-library---content--migration/files/research-papers/2022/12/military-expenditure-transparency-defence-inflation-and-purchasing-power-parity.pdf>, accessed on 26 August 2024.
 6. See the fifth report of the Select Committee on Defence finalised on 15 January 2008, pp. 118–123, available at <https://publications.parliament.uk/pa/cm200304/cmselect/cmdfence/465/46517.htm>, accessed on 12 May 2024.
 7. 'Defence Inflation Estimates Statistical Notice 2012/13', republished by Ministry of Defence, UK, 29 May 2014, available at https://assets.publishing.service.gov.uk/media/5a7eb3d6ed915d74e33f1e2f/ab_defence_inflation_statistical_notice_201213_revised.pdf, accessed on 15 May 2024.
 8. 'External Consultation on the Proposed Change of Scope or Cessation of the "Defence Inflation Estimates" National Statistic', Ministry of Defence, UK, available at https://assets.publishing.service.gov.uk/media/5a829fd5e5274a2e8ab587f0/Consultation_Outcome_Defence_Inflation_Estimates.pdf, accessed on 12 May 2024.
 9. *Ibid.*
 10. 'DoD Financial Management Regulation 7000 14-R', Volume 2A, Chapter 1, Section 010303, § B.1, 1–70, available at https://comptroller.defense.gov/Portals/45/documents/fmr/current/02a/02a_01.pdf.
 11. Passed in 1983, the Nunn-McCurdy Act established reporting requirements for the Department of Defense (DOD) when an MDAP, or a designated major sub-programme of one, experiences cost overruns that exceed specific thresholds beyond original or current baseline estimates. The act established a mechanism for notifying Congress of these cost overruns and further action is initiated wherein the project is closely monitored/restructured or even stopped. 'The Nunn-McCurdy Act: Background, Analysis, and Issues for Congress', Congressional Research Service, 12 May 2016, available at <https://crsreports.congress.gov/product/pdf/R/R41293>, accessed on 13 May 2024.

12. 'The Use of Inflation Indexes in the Department of Defense', IDA Paper P-4707, May 2012, available at <https://apps.dtic.mil/sti/pdfs/ADA561742.pdf>, accessed on 13 May 2024.
13. The National Defense Budget Estimates, commonly referred to as 'The Green Book', is a reference source for data associated with the current budget estimates of the Department of Defense (DoD). It provides current (nominal) and constant (real) dollar historical data for the Department, as well as selected data on all national defence, the total federal budget, and the US economy. See National Defense Budget Estimates for FY 2025', Office of the Under Secretary of Defense (Comptroller), April 2024, available at https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2025/fy25_Green_Book.pdf, accessed on 26 August 2024.
14. 'The Use of Inflation Indexes in the Department of Defense' (Journal Version), IDA Paper P-4807, February 2013, available at <https://www.ida.org/-/media/feature/publication/i/id/ida-nsd4807-the-use-of-inflation-indexes-in-the-department-of-defense-journal-version/ida-document-ns-d-4808.ashx>, accessed on 24 July 2024.
15. Published by Office of the Economic Adviser, Department for Promotion and Industry and Internal Trade, Ministry of Commerce & Industry, Government of India, available at http://eaindustry.nic.in/experimental_sp_index.asp, accessed on 13 May 2024.
16. The Defence Procurement Manual-2009 (Revenue procurement) contains the rules and procedures to be adopted for procurement of revenue stores and is uniformly applicable to all the goods and services procured by the Defence Services, Ministry of Defence and Inter Services Organisations out of the Revenue Budget to meet the defence needs. See 'Defence Procurement Manual-2009 (Revenue Procurement)', Ministry of Defence, Government of India, available at <https://www.mod.gov.in/sites/default/files/DPM2009.pdf>, accessed on 26 August 2024.
17. Sanjay Sethi, 'Performance Measurement: A Model for the Department of Defence Production', Manekshaw Paper, No. 46, 2014, pp. 28–29, available at https://www.claws.in/static/MP46_Performance-Measurement-A-Model-for-the-Department-of-Defence-Production.pdf, accessed on 13 May 2024.