



Defence Equipment Cost Inflation in Europe

An analysis prepared for the
European Defence Agency

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1 EXECUTIVE SUMMARY

- 1.1.1 This paper responds to a request from the European Union Institute for Security Studies (EUISS) for an analysis for the European Defence Agency of defence equipment cost inflation in Europe. It has drawn on previous studies, coupled with work recently undertaken by Davies Economic Consultancy and Polaris Consulting.
- 1.1.2 The concept of cost escalation was first recognized by Norman Augustine in his “Final Law of Economic Disarmament”, which suggested that by 2054 only a single aircraft will be economically viable for the United States’ military due to its immense cost. In the UK, both Pugh (Pugh, 1993) and Kirkpatrick (Kirkpatrick, 1995) separately and together (Kirkpatrick and Pugh, 1983) found substantial real terms Intergenerational Cost Escalation. Others, eg Chalmers (2009) and Davies et al (2011) for UK equipment, Arena (2006) for US navy equipment and Hove and Lillekvelland (2014) for Norway, all focusing on the more recent period obtained lower but still substantial estimates of annual real terms growth.
- 1.1.3 All these studies emphasise the importance of the “Tournament” nature of defence goods. For most categories of defence equipment, regression analysis shows that cost growth is entirely explained by increases in performance parameters. For civilian goods, competition between producers and consumers’ affordability have moderated price growth.
- 1.1.4 Pushing beyond the highest current level of technology brings greater costs in the development of new technologies with adverse consequences for reliability. Furthermore, suppliers of cutting edge technology threshold generally have a great deal of market power. This may result in decreasing incentives for efficient productivity, further driving up costs. Intergenerational cost escalation leads to higher unit costs, so fewer platforms can be afforded which in turn leads to a loss of economies of scale and even greater increases in unit costs- the “vicious circle of cost escalation” or “circle of doom”. Unit costs have also been driven up by the pattern of Defence industrial consolidation and reduced completion that has followed the end of the Cold War.
- 1.1.5 Cost Growth has typically been accompanied by delays in delivery. This is partly cost growth in an alternative guise. Also budgetary constraints have often caused delays while supplementary funds were sought or through slipping interim payments into the next financial year.
- 1.1.6 One response has been the move towards international collaboration, particularly for military aircraft. Early multinational collaborations were disappointing as the savings from increased economies of scale were at least partly offset by additional costs associated with compromising on specifications, extra time delays and arrangements for work sharing. In the USA for the JSF, Cost As (an) Independent Variable (CAIV) was applied. The concept was that any extra specifications would have to be traded off against cost, but the champions of cost control were too weak to stop their military colleagues insisting on specification changes in the interest of military effectiveness.
- 1.1.7 A review for this study of major Royal Navy platforms over the past 55 years has demonstrated the outcome of cost growth. Out of the 19 major platform types analysed, 11 were delayed, 9 were over budget, and 6 had fewer units acquired than originally planned. More recent platforms tend to exhibit higher budgetary overruns, delays or cuts in numbers of platforms. The Queen Elizabeth Class carriers, for example, cost more than the original estimates, and are now due into service in 2018, compared with an original estimate of 2012. Similarly, only 6 Type 45 destroyers were eventually built as against the 12 originally planned. Yet the UK Defence Budget has remained remarkably constant in real terms over the past sixty years.

- 1.1.8 The key problem for European countries is that increasing defence costs can render capabilities problematic or even non-existent. Examples may be identified in the area of the Royal Navy, such as Carrier Strike. Much the same applies for France's Navy. The French *Horizon* air defence frigates was originally to number 12 but ended with only 6 being constructed. The French have seen quite large budget cuts since 2010. Rising costs of equipment such as the Rafale and the A400M have made budget commitments difficult. German acquisitions have come out heavily in favour of buying more off-the-shelf equipment rather than investing in development of new technology in response to large planned cuts to the equipment budget and a number of large programmes cancelled.
- 1.1.9 There is limited data on intergenerational operating and maintenance costs over time. Manning figures provide one proxy measure of operating and support cost. For the UK and German navies, manning levels were positively associated with capability and cost until fairly recently. However, there would appear to be a more recent attempt to design the latest platforms to be more manpower efficient and need fewer staff to operate them.
- 1.1.10 The UK O&M budget rose substantially in real terms over the period since 2005, in marked contrast to France, Spain and Italy where it has risen modestly (France), stagnated (Spain) or fallen sharply (Italy). This merely reflects a difference in the willingness and ability of Governments to accommodate O&M costs, although there are a couple of interconnected factors that may have been responsible for pushing up O&M costs more in the UK. One is its greater involvement in overseas operations. The other is its greater reliance on contractorisation. While the UK MOD has rigorously tested the value for money of outsourcing against in house provision before such support functions were contractorised, such tests were undertaken on the basis on normal peacetime levels of activity.
- 1.1.11 The UK has undertaken a series of acquisition reforms in an attempt to overcome the twin problems of cost over-runs and delays in delivery but has continued to suffer cost overruns and delays.
- 1.1.12 In response it is essential to recognise the reality of defence equipment cost escalation. A number of semi-independent factors contribute to this escalation, although they are linked into a vicious circle. These factors need to be tackled differently.
- 1.1.13 It needs to be recognised that new management systems are unlikely to deliver reduced costs. Most countries also need to address the perverse incentives encouraging project optimism bias and lack of responsibility for managing costs.
- 1.1.14 They need to be willing to reduce performance to ensure projects are on time and to cost. Although performance is important, there is a point at which capability becomes intermittent or compromised. Timescales for platform development need to be shortened, and platforms and systems become more flexible and updatable.
- 1.1.15 Countries need to do more to specialise roles on a national basis. The Danes removed their submarine capability in the 2000s and it could be more effective to lose a capability completely, to enable others to be funded properly, rather than to deliver compromised capabilities across the board.
- 1.1.16 Different ways of delivering capability need to be considered. Projecting air power, for example, may be done not through unaffordable carriers and manned fast jets, but instead by small UCAVs launched from existing smaller naval platforms. There will be a need to look at a wider option set at the start of individual acquisition programmes. In many cases this will involve building simpler platforms (for example the Royal Navy's HMS Ocean was not late or over budget, built using commercial standards), faster. In other cases this will mean buying more off the shelf.