

## The Economics of Joint Forces

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### **Introduction: the need for critical evaluation**

The 1998 Strategic Defence Review confirmed the increasing importance of joint forces and the need to extend the joint approach throughout defence, embracing the front line, command structures and support areas. “Success in modern warfare depends on joint teamwork. Battles and wars are won by maritime, ground and air forces operating effectively together in support of shared military objectives” (SDR Essays, 1998, p8-1). A further official statement stressed that “The concept of using Joint Forces with the three arms of the Services operating together, is today more and more important as the traditional distinctions between maritime, land and air operations have been removed. The Navy, Army and RAF rely on each other and combined they provide a greater punch than possible as separate elements. By increasing ‘jointery’ we are not proposing to amalgamate the three Services into a single amorphous defence force. There is great value in the separate identities and distinct characteristics of the Navy, Army and Air Force ... because the needs of the modern battlefield still require the specialist skills and ethos of each Service...” (Joint Forces, MoD, 1999, pp1-2).

The various arguments for jointery *appear* persuasive but such impressions need to be evaluated more carefully and critically. Whilst there is a general absence of economics literature on jointery, economists would approach the subject by focusing initially on the defence economics problem and the need for difficult choices in a world of uncertainty. Typically, the economist’s task is to identify the range of choices together with the myths, emotion and special pleading in the case for jointery and to subject these claims to economic analysis, empirical testing and critical evaluation (Hartley, 1998). A starting point requires an outline of the main features of UK joint forces.

### **The stylised facts of UK Joint Forces**

Joint operations are not a new concept, but previously they were implemented on an *ad hoc* basis during crisis or war. Future UK defence policy and planning will be based on joint forces (SDR, Essays, 1998; MoD Joint Forces, 1999). Before the Strategic Defence Review (SDR), there were some joint force initiatives, namely, a permanent Joint Headquarters, a Joint Rapid Deployment Force and a Joint Services Command and Staff College. SDR extended the joint approach to create Joint Rapid Reaction Forces, a Chief of Joint Operation, Joint Force 2000, a Joint Helicopter Command and various other joint units. Table 1 lists the UK joint forces and units and

their features.

**Table 1. Joint Forces, UK**

Organisation	Features
Joint Rapid Reaction Forces (JRRF)	A pool of some 20 warships, 4 ground force brigades, about 110 combat aircraft and over 160 other aircraft (replacing the JRDF)
Chief of Joint Operations	Top level budget holder for JRRF and for training of this Force.
Joint Force 2000	A single force combining the RNs Sea Harriers and the RAF Harriers to operate from land bases or carriers. Plans to replace all Harriers with a common aircraft type.
Joint Helicopter Command	The Command will bring together, under a single joint organisation, the battlefield helicopters of all three Services.
Joint Ground Based Air Defence	Brings together the low-level air defence capabilities of the Army and RAF Regiment.
Joint Nuclear, Chemical and Biological Defence	A new joint Army and RAF NCB regiment to be formed
Joint Forces Logistic Component Headquarters	Part of Joint HQ to co-ordinate all joint logistics support.
Chief of Defence Logistics	To replace the three single Service logistics organisations with a single integrated organisation.
Defence Logistics Organisation	DLO will include 14 Defence Agencies.
Joint Service Signal Units	Bringing together of the Army and RAFs communications support units.
Joint Doctrine and Concepts Centre	For developing joint doctrine and future joint vision for UK Armed Forces.

MoD Joint Forces (1999).

The official literature claims two major arguments for jointery. First, the Armed Forces together provide a greater capability than the sum of their individual parts; and second, joint solutions offer

efficiency savings through rationalisation and the elimination of wasteful duplication. Nonetheless, continued emphasis is placed on the need to retain the individuality and separate identity of the three Services and their specialist skills, ethos, loyalty and commitment. For example, one option considered by SDR was to transfer all battlefield helicopters to a single Service. “But, as with merger of the Services, we believe that any advantages would be outweighed by the damaging impact it would have on ethos, morale and operational effectiveness” (SDR Essays, 1998, p8-7). Similarly, both the Army and RAF have maintained separate air defence capabilities using different variants of the Rapier missile. Each used their own operating procedures, command and control systems, maintenance support chains and training organizations. This has been operationally inflexible and wasteful” (SDR Essays, 1998, p8-7). The new Joint Ground Based Air Defence will “have a properly integrated and flexible low level air defence coverage, as well as achieving greater efficiency, particularly in Rapier training and support” (SDR Essays, 1998, p8-8). Despite the emphasis on more jointery, the official position continues to emphasise the strengths of the single Services:”...we are not proposing to amalgamate the three Services into a single amorphous defence force” (MoD, Joint Forces, 1999, p2). These arguments for jointery need to be assessed critically, including the claims made about the continued benefits of three Services (eg. specialist skills; ethos; morale; and commitment).

### **The defence economics problem**

The defence economics problem arises because the Armed Forces have unlimited demands for new equipment, more personnel and improved bases, but the resources available for defence spending are limited. This problem has been accentuated by falling defence budgets and rising equipment costs. Typically, equipment costs have been rising at about 10% per annum in real terms, leading to forecasts of a one tank Army, a single ship Navy and Starship Enterprise for the Air Force! With a limited defence budget, rising unit costs mean smaller numbers of new equipment for the Armed Forces. Inevitably, the twin pressures of falling budgets and rising unit costs mean that difficult defence choices cannot be avoided: something has to go and the question is what goes?

There are three broad sets of choices for defence policy-makers and governments. First, a further major defence review of the UK’s commitments (eg. SDR II which might re-examine the UK’s world-wide role; its commitment to provide a complete range of modern air, land and sea forces; and the size of UK forces in Germany). Second, the ‘fudge it’ option or a defence review by stealth (eg less training; delays in new equipment programmes; running-on old equipment). Third, improvements in efficiency leading to higher productivity (eg. Smart Procurement; Public/Private Partnership initiatives). Efficiency improvements might mean that it is possible to achieve the same level of defence ‘output’ at a lower cost, or a higher level of capability from the same expenditure. In this context, Joint Forces offer efficiency improvements by maximising defence capability from a limited budget and/or providing cost savings through rationalisation, less duplication and economies from shared training and support activities (eg logistics).

The UK defence budget provides only limited information on the costs of Joint Forces. Table 2 shows the main budget headings for the UK defence budget in 2000/2001. Joint Forces have a specific budget of about £5.2 billion accounting for some 23% of total defence expenditure ( Chief of Joint

Operations and Chief of Defence Logistics) compared with the single Services with a budget of £8.9 billion which accounted for almost 40% of the total. However, this is a misleading comparison since the costs of the Joint Rapid Reaction Forces are borne by the individual Services. For illustration, if each of the Services contributes 20% of its force to the Joint Rapid Reaction Force, the cost of the Joint Force would be some £1.8 billion giving a total cost of jointery of at least £7 billion in 2000/2001 (ie. including the £5.2 billion for Joint Operations and logistics).

Table 2. UK Defence Budget, 2000/2001

Budget Area	Expenditure: £ million
Commander-in Chief Fleet	1105
General Officer Commanding (Northern Ireland)	545
Commander-in-Chief Land Command	3166
Air Officer Commanding-in-Chief RAF Strike Command	1609
Chief of Joint Operations	335
Chief of Defence Logistics	4854
2 <sup>nd</sup> Sea Lord/Commander-in-Chief Naval Home Command	588
Adjutant General (Personnel and Training Command)	1261
Air Officer Commanding-in-Chief RAF Personnel and Training Command	618
2 <sup>nd</sup> Permanent Under Secretary of State Centre	2069
Defence Procurement Agency operating costs and nuclear warhead/fissile material programme	635
Defence Systems Procurement	5617
Major Customers' Research Budgets	435
Total	22820

Source: MoD (2000).

Some further insights into the UKs joint units is provided by employment data for Service and civilian

personnel. Table 3 shows employment data for the Chief of Joint Operations, Defence Logistics and the Joint Helicopter Command. The three joint units in Table 3 employed some 55000 military and civilian personnel, representing about 18% of total military and civilian personnel employed by MoD in 2000. Once again, these are only part of the UKs joint forces, but the data in Table 3 are the only published statistics on joint units: they reinforce the point about the lack of data in this increasingly important aspect of UK defence policy. The lack of published data means that Parliament, voters and taxpayers do not have the statistical information needed for sensible public debates about the UKs joint forces.

**Table 3. Employment in Joint Units, 2000**

Unit	Service Personnel (000s)	Civilian Personnel (000s)
Chief of Joint Operations	4.6	0.3
Defence Logistics Organisation	8.4	30.3
Joint Helicopter Command	10.8	0.5
Total Joint Units	23.8	31.1

Source: MoD (2000).

### **The efficiency of Joint Forces: lessons from the private sector**

Armed Forces are monopoly organisations relying on rule-based decision-making so resembling command economies. In contrast, the typical Western economy prefers competition in private markets to state monopolies and prefers capitalism to central planning. Questions then arise as to whether the private sector provides any lessons for the Armed Forces and jointery?

Employment contracts provide efficiency incentives. In the private sector, employers have limited legal rights over their labour force. Private sector employment contracts specify the terms on which buyers and sellers agree to market trading (eg. wages; hours of work; fringe benefits; conditions of employment, including health and safety; trade union representation; strikes; and the notice required for quits and firing). In contrast, military employment contracts have some distinctive features resembling contracts of slavery. Individuals serve for a specified period which has to be completed during which they are subject to military law and discipline; they cannot strike for higher pay during their contract; they can be ordered to serve in a variety of locations, sometimes with little notice and without family support; and their duties can result in injuries and death. The duration of military employment contracts creates a challenge for the Armed Forces since long-term contracts and guaranteed employment makes it more difficult to ensure that military personnel continue to provide efficient effort levels.

Private firms offer incentive payments to managers and workers whereby they reward efficiency improvements and innovation: entrepreneurs and top managers share in profits whilst other managers

and workers might receive performance-related pay. In privately-owned firms, the pursuit of profits leads to the continuous search for opportunities to reduce and economise on costs. Such economies might be achieved by creating new forms of industrial organisation and by mergers with other firms. Pressure to economise on costs comes from rival firms and from the capital market with its threats of take-over and bankruptcy and the possibility of job losses for managers and workers. In a competitive private enterprise economy, firms will not remain static: they will be subject to continuous change as they search for new markets, new products, new methods of production and new forms of industrial organisation (eg. the mix of outside suppliers and work undertaken 'in-house: the 'make or buy' decision). In this form, the private enterprise model has implications for jointery.

In private enterprise economies, the search for profits and the desire to economise on costs determines the form and extent of jointery, including the efficient size of an organisation together with its degree of specialisation and diversification. Mergers are the private sector equivalent of jointery and they involve both benefits and costs. The benefits of mergers include lower costs from rationalisation, from achieving economies of scale due to a larger output and from economies of scope from producing two or more activities in one firm (eg. military and civil aircraft). Further benefits might include technical progress as the merger results in a larger firm able to undertake costly research and development. But mergers also involve costs through the creation of monopoly power resulting in higher prices, monopoly profits, a lack of innovation and inefficiency (eg. managers pursuing a quiet life, 'consuming' luxury offices and chauffeur-driven cars).

There are three types of mergers, namely, horizontal, vertical and conglomerate. Horizontal mergers involve firms at the same stage of production, say, two tank-producing companies or two warship builders. Examples from the armed forces might include mergers between infantry regiments or between artillery regiments or between vehicle repair units. Other examples include the formation of Joint Force 2000 (RAF and RN Harriers which will eventually be replaced by a common aircraft type), the Defence Logistics Organisation and Joint Ground Based Air-Defence. Vertical mergers involve firms at different stages in the production process, say, a tank company acquiring a steel-making plant. For the armed forces, possible examples include an infantry regiment merging with a vehicle repair unit, or with a logistics unit, or with an air transport squadron, or assuming responsibility for the recruitment and training of its soldiers. The Joint Helicopter Command resembles a vertical merger in that it combines attack, commando and support helicopter units. Conglomerate mergers involve diversified firms with a variety of unrelated products and services (eg. defence companies acquiring motor car, insurance, construction and hotel businesses). Relevant examples for the armed forces include Joint Rapid Reaction Forces and the 'ultimate' solution of merging all three separate services into a single defence force (a conglomerate firm or the purple solution).

The private sector model of industrial organisation and mergers would result in jointery being determined by market forces. Military units and bases would be regarded as firms with military commanders as entrepreneurs and managers: they would be required to combine their forces of equipment, personnel, bases and facilities to produce a defence output at minimum cost. In this model, commanders would be able to select the most efficient 'mix' of work undertaken 'in-house' and 'bought-in' from outside contractors. Similarly, unit commanders would be allowed to determine the

most efficient size of their units and the most efficient scope of their operations, including the possibility of mergers and take-overs. For example, in the army, this approach would allow unit commanders to question whether the traditional regiment is the best form of organisation and its most efficient size. Army commanders would be able to determine whether it would be more cost-effective to merge with other similar units (eg. horizontal mergers between infantry units to form larger units), or with different army units (eg. vertical mergers between infantry, artillery, tank and transport units), or with units in other services (eg. conglomerate mergers with an infantry unit merging with air force strike and transport squadrons). However, application of the private sector model requires that military commanders and their personnel need incentives to behave efficiently and seek lower-cost solutions. Competition, the capital market and profits provide the incentive mechanisms in the private sector and these features are absent in the armed forces (and elsewhere in the public sector).

For military commanders, the equivalent of private sector profits would be the introduction of performance-related pay. Commanders would be given fixed budgets with monetary rewards for economising; and genuine entrepreneurship would allow commanders to change their 'mix' of inputs, so that they would have the freedom to allocate their budgets between different combinations of personnel, equipment and facilities (including training areas where they might replace large land training areas with simulators). In addition to fixed budgets, military commanders would also need to be given realistic output targets against which their performance can be assessed and rewarded or punished. Here, there are at least two problems. First, unlike the private sector, the armed forces operate as a set of non-competing organisations: indeed, the existence of three services encourages collusion and the allocation of the defence budget on the principle of 'buggins turn.' Second, experience with output targets and performance indicators shows that they can produce unexpected and undesirable results (eg. people can adjust and play any games).

### **A critique: the economics and politics of jointery**

Economic models have been applied to political markets, comprising political parties, governments, bureaucracies and other interest groups. Such models can be used to analyse the military-political-industrial complex which includes the armed forces, the Ministry of Defence, vote-sensitive politicians, especially from constituencies which contain large military bases or defence plants, together with defence contractors as interest groups of scientists, managers and workers. All these groups have budgetary and income interests in influencing defence policy and defence budgets in their favour and this will affect the way in which they present information to governments. For example, acting as budget-maximisers bureaucracies, defence ministries and armed forces have every incentive to over-estimate the threat and under-estimate the costs of their preferred policies. Examples include exaggerating the enemy's missile threat; focusing on regional instabilities and on the need to support every United Nations peace-keeping and humanitarian mission; identifying the 'gaps' in military capability shown by operations such as the Gulf conflict and Kosovo; and the need for new equipment to meet the requirements of new missions (Sandler and Hartley, 1999). As a result, economic models of bureaucracy predict that to obtain funds, the armed forces will 'play any games,' including jointery.

Joint operations will be supported by the services if they are the only means of obtaining funds in an era

of 'tight' defence budgets. Jointery can be presented as a means of 'maximising military capability' and of achieving efficiency savings from 'rationalisation and co-ordination, so freeing up resources for other defence priorities.' These are attractive aims, but they cannot be assessed without information on the magnitudes involved (eg. the size of efficiency savings). Also, jointery creates opportunities for all three services to combine and collude to influence government policy in their favour. They can point to the need for Joint Rapid Reaction Forces enabling the UK to be a major participant in international operations such as the European Rapid Reaction Force, as well as being able to use such a Joint Force for United Nations peace-keeping and crisis management missions (including missions which are attractive to vote-sensitive governments). Jointery can also be used to justify and support major single-service equipment programmes which might not be approved on a single-service basis. Examples include strategic transport aircraft and combined RAF and RN support for the Joint Strike Fighter aircraft and the associated aircraft carriers for the Navy.

To economists, jointery resembles a cartel and monopoly situation. Interestingly, successful capitalist economies prefer private markets rather than state ownership and central planning, and competition is preferred to monopoly. Applying these principles to the armed forces and jointery suggests the scope for inter-service competition.

Civilians in the form of defence ministers, civil servants and politicians are at an information disadvantage compared with the expertise embodied in admirals, air marshals, generals and their specialist staffs. Competition and rivalry between the armed forces offers civilian defence managers at least three benefits (Sapolsky, 1996). First, inter-service competition generates vital information. For example, the RAF might divulge far more information than the Royal Navy about the vulnerability of the Navy's new aircraft carriers; similarly, the Army will be more likely than the RAF to reveal the vulnerability of the RAF's Eurofighters to surface-to-air missiles. Second, inter-service competition gives civilian defence managers some bargaining power in confronting senior military officers when seeking to control defence policy: it allows them to 'play one service against another when particular policies are preferred' (Sapolsky, 1996, p1). For example, if the RAF is reluctant to support a UN mission, the Navy might offer to undertake the task. Third, inter-service competition provides an incentive for innovation. The prospect of increased or reduced funding provides each of the services with an incentive to offer new ideas and novel methods of providing defence capability. If, for instance, governments and the electorate support UK involvement in UN peace-keeping missions and are prepared to fund such missions, the armed forces might respond with a variety of novel proposals for providing such capability, including joint forces (eg. the use of unmanned air vehicles to avoid casualties to UK personnel).

There is a major barrier to inter-service competition resulting from the fact that competitors do not like competition whilst governments and politicians usually dislike making the 'difficult and painful' choices required by the competitive process (ie. they have to choose a 'winner'). Rather than compete, the armed forces prefer to collude and work together for mutual benefit, allocating budgets on the principle of 'buggins turn: this year, the RAF will receive its Eurofighters; next year, it is the Army's turn to receive its new armoured fighting vehicles, after which the Navy will receive its new aircraft carriers and the Joint Strike Fighter. The armed forces are likely to oppose competition by pointing to the 'costs



and wastes of competitive duplication' and by emphasising the apparent benefits and successes of joint operations. However, jointery creates a cartel and facilitates collusion. Significantly, cartels, collusion and anti-competitive agreements amongst private firms are subject to legislation in the form of UK competition policy which aims to protect the 'public interest.' Collusion between the armed forces is most likely when difficult choices do not have to be made. But collusion will cease when one of the armed forces recognises that its vital interests are threatened by further budget cuts and the need for more reductions in its front-line strength. In this context, Sapolsky has concluded that "There is no better spur to candor, error correction, and creativity in defense planning than a very tight budget and a few smart rivals competing for budget share" (Sapolsky, 1996, p3).

There is a further limitation of inter-service competition, namely, it is a competition restricted to the established armed forces. In contrast, private sector competition allows new entrants and these provide a further competitive stimulus to firms established in the market. For the armed forces, innovation has to be promoted by the existing services, there being no opportunity for a new armed force to enter the market. This means that any new revolutionary weapon has to be promoted by one of the services (eg. the introduction of aircraft and the tank in WWI; nuclear forces after 1945). Some new technologies might increase inter-service competition: for example, the Army and the RAF might compete over the ownership of unmanned air vehicles. But, in other instances, new technology might be a threat to traditional forces structures so that 'established interest groups' will oppose innovation which will make them 'worse-off.'

Nor is competition necessarily attractive to governments and politicians. Competition requires governments to select a winner and as a result, there will be losers. A 'winner takes all' competition for a new major equipment project means that government will be subject to lobbying by defence contractors, with further pressures from vote-conscious politicians preferring to share the contract between a number of bidders (and hence a number of constituencies). Similar problems are likely from inter-service competition, especially where the possible losers might be traditional Army regiments with long histories and strong support from retired generals and from the local community. As a result, governments might avoid the difficult choices required by competition, preferring instead a 'quiet life' with the costs of such behaviour being borne by taxpayers. After all, unlike entrepreneurs, governments do not share in any efficiency savings which their policies might achieve.

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More fundamental questions arise about the appropriate balance between joint and single-service forces and the point at which a single defence force becomes worthwhile. For some tasks, the use of specialist single service-forces will be most efficient and cost-effective, whilst other tasks will be most efficiently undertaken by joint forces. The parallel in private enterprise economies is the distinction between single-product which obtain economies of scale and learning from specialisation and multi-product firms which achieve economies of scope from the range of their activities. Currently, official

policy simply refers to the need for “... the specialist skills and ethos of each Service, and individual units depend for their fighting capability on the training, discipline and ethos generated by their parent Service” ( Joint Forces, MoD, 1999, p2). This suggests that the armed forces will determine the appropriate mix of joint and single services and that it will be extremely difficult for government ministers and civil servants to question such judgements by the services. One solution to this information problem might be to introduce a policy rule requiring rivalry whereby the armed forces and private industry would be allowed to compete to offer innovative solutions to joint activities. Private firms would be invited to bid for economical jointery, seeking out cost-savings across the armed forces and not only within each service. Such competitive bidding would extend from front-line units to support areas, including all aspects of military and civilian personnel policies. For example, there might be potential cost-savings from joint recruitment and training; or, the Navy might find it difficult to attract married women returners, but such trained naval personnel might be a valuable resource willing to serve in local Army and RAF units (an opportunity requiring a joint approach). For front-line forces, private firms would bid for management contracts which combined various military units (cf. the role of managers in the NHS); and in the support areas, private firms would be invited to seek-out cost-saving joint solutions. The distinguishing feature of competition is its ability to discover opportunities for cost-savings and for innovation.

## **Conclusion: future possibilities and challenges**

Challenges and future possibilities for jointery can be grouped around two themes:

i) *The challenge of creating an incentive system to promote jointery where it can be shown to be worthwhile.* Three examples of incentives can be suggested. First, the introduction of employment contracts similar to those in the private sector which place senior armed forces personnel at risk by providing rewards for good performance and penalties for poor performance. Such contracts require the application of performance indicators for joint units, recognising that these indicators can give unexpected and undesirable results. Second, joint units need their own budgets embracing the acquisition of personnel and equipment, with appropriate efficiency incentives. Third, the UK armed forces market might be opened up to competition by allowing other NATO armed forces to compete and offer joint force solutions. Similarly, there are real opportunities for international jointery at both the European and NATO levels.

ii) *One service or three?* Further ‘downsizing’ will raise the inevitable question about the point at which a single defence force - a joint defence force - might be preferable to three single services. What, if any, is the minimum critical mass for a separate single service. UK policy uses language which suggests that this minimum critical mass has not yet been reached: “...we are not proposing to amalgamate the three Services into an amorphous defence force” (Joint Forces, MoD, 1999, p2).

In assessing the future of jointery, UK defence policy-makers will have to consider selecting the most efficient ‘mix’ of joint and single-service forces from the available defence budget: current policy is based on a case-by-case *ad hoc* approach. Jointery will involve both gainers and losers. Gains will be reflected in lower costs and greater military capability. However, if jointery is the military equivalent of

monopoly, cartels and collusive tendering, then the losers will include UK taxpayers and citizens who are less well protected.