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The Destinations of the Defence Pound

Trevor Taylor and John Louth

In defence acquisition, the tax revenue implications of a given choice are frequently overlooked. Given that the government, including the Ministry of Defence, is committed to reducing the budget deficit – a function of spending and revenue – this issue is highly pertinent.

Using an actual contract and an explicit accounting method, this paper finds that the tax revenues are significant; they can yield to the Exchequer over a third of the value of the contract. This figure is of obvious procurement policy significance at a time when there is such concern with the government's budget deficit. It is important to stress that the paper does not seek to assess any wider economic consequences from a contract, which would include multiplier effects. Rather, it is focused on the direct and calculable revenues to government associated with certain sorts of government spending. The paper also briefly considers its findings in relation to the wider context of procurement structures and law.

The stimulus for this project came from two elements of government policy that emerged during the first year or so of the Conservative-Liberal Democrat coalition. One element was the message in the Green Paper on Equipment, Support and Technology that the government intended to buy more defence equipment 'off-the-shelf'. Since defence companies in the UK cannot afford the costs or accept the risks of developing major pieces of defence equipment without government support, the clear implication was that the government meant to buy more equipment from foreign suppliers. Moreover, there was no mention of arrangements for licensed production, suggesting that the Ministry of Defence (MoD) envisaged buying more from the company's own production line. At the end of August 2011, the government announced an order for fourteen Chinook helicopters from Boeing, at a cost of £1 billion,[1] which was fully in line with the approach outlined above. At the beginning of October, Agusta-Westland announced that it would make 375 staff redundant because of shortages of work.[2]

The second element of government policy was the decision that the MoD must make a contribution towards reducing the government's budgetary

deficit, even though defence today has a much smaller share of government expenditure than was the case during the Cold War. Soon after taking up office in 2010, the then-Secretary of State for Defence Dr Liam Fox spoke of:[3]

> …two tasks which I believe I have as Secretary of State for Defence in addition to the war in Afghanistan. The first is to help deal with the deficit as part of the coalition cabinet, which understands that without healthy finances we can create neither the public services nor the national security we desire. The second is to carry out a long overdue Strategic Defence and Security Review (SDSR).

Just over a year later, the minister for international security strategy in the MoD, Gerald Haworth, observed that:[4]

> Defence is having to play its part in tackling our national deficit. The US looks like following suit. Some painful yet essential decisions have been taken, and more may follow. At the same time, my colleague, Liam Fox, and I, are both hawks on fiscal rectitude and hawks on strong national defence. It's a painful position to be in, but we are committed to strength in both.

We have been told that the ministerial team's orientation in 2011 was in fact to be stronger on deficit reduction than support for defence overall, and this seems unlikely to change given the new secretary of state's conviction that financial challenges are a greater challenge for UK security than anything else.[5]

The question at the heart of this briefing paper concerns whether there is an element of contradiction between these two policy lines; in particular, whether buying off the shelf from overseas could well have a (significant) negative effect on government revenues and thus the public sector deficit. This examination becomes more pressing when it is considered that both the Treasury Green Book[6] and the MoD's guide to investment appraisals direct officials to consider costs and benefits to the nation as a whole, rather than just to a government department or programme: 'Investment appraisals are concerned with making best use of national resources, not with how the gains and losses arising from any changes are distributed'.[7] We should underline that this paper does not address a different potential contradiction in UK policy – the intention to buy more defence equipment 'off-the-shelf' from a global marketplace at the same time as supporting British defence exports. That issue, while of considerable significance, would involve a very different sort of study and methods, and so is not addressed here.

Approach

We address in particular a rather clear dynamic. When a government spends money with a defence contractor, some element of that money rapidly is paid to one government or another in the form of taxes. If the UK government

spends money on a UK contractor with a largely British supply chain, the great majority of that tax paid will flow back to the British Government, whereas money spent with an overseas supplier does not. Instead it becomes a source of tax revenue for another government.

Altogether we calculate that the British MoD spends about 55 per cent of the defence budget with the private sector, and of course expenditure on internal staff and internally generated services is also subject to taxation. We trust that government and Office of Budgetary Responsibility (OBR) modelling of the savings to be derived from military and civil servant staff cuts takes account of the consideration that some will remain unemployed and that UK tax revenues as well as its wage bill could be reduced. However, given the complexity of the UK economy and even defence as a single sector, we decided not to consider defence as a whole, or even the element of the defence budget spent with the private sector. Instead we opted to begin with something simpler, relatively easy to grasp, with explicit assumptions which readers can assess for themselves. We decided, in short, on an accounting approach using data associated with a model procurement case and basing calculations on known taxation rates.

This paper is intended as a contribution to wider debates and it is therefore important that that shape of the investigation is clearly understood. What follows are a series of steps/calculations concerning an expenditure of £1 million by the government on the Assessment Phase of a project concerned with equipment development and support, and associated services. The reasoning behind each calculation is presented in the text for the reader's critical evaluation. Where there is a need to estimate a number, we have sought to estimate at the lower end of the range as far as government revenue is concerned and to make assumptions explicit. Obviously, this is a small and simple contract in defence procurement terms, but it is adequate to expose important principles and real effects. We briefly discuss our findings for larger defence contracts later in the piece.

Previous Studies

We were aware of at least two studies since 2009 that have attempted to address this broad area of research. The first, looking at the UK by Oxford Economics, found that 'the direct taxation impact from a £100 million increase in government procurement from the defence sector amounts to £11.5 million'.[8] This value was based on an economic approach that sought to estimate average tax revenues across all industrial and service sectors relevant to defence in the UK. The study consequently concluded that 11.5 per cent of government orders in the UK defence industry is returned to government via taxation. This seems low in the light of the US study cited below, as well as our own findings (further below) drawn from an extant Assessment Phase programme. A figure a little above 10 per cent would

appear to reflect an assumption that the employees involved would be on rather low salaries, whereas we are aware of the high proportion of highly qualified people employed in most parts of the defence industrial base and the pay levels they command.[9]

Reference needs also to be made to a macroeconomic study of the impact of the defence industrial sector on the state of Massachusetts in the US, which found that just over 20 per cent of government spending on defence in the state went back as national and state tax revenues.[10] Account here needs to be taken of the fact that, while the calculation of tax revenues to GDP is not an exact science with different authorities offering different sums, it is clear that in the US the figure is only about two-thirds that which applies in the UK (Americans enjoy less state welfare provision and much health care is privately provided). In the UK tax revenues appear to be between 35 and 39 per cent of GDP.[11] In brief, it might therefore be expected that the government might get more back in tax revenues in the UK than the US simply because British citizens pay more tax.

Both these studies were focused on the wider benefits to the economy from investing in defence rather than just the tax benefits to the government, which is the concern of this briefing paper.

The Defence Pound – Financial Model

To effectively demonstrate the potential destination of the defence pound when companies registered and operating in the UK are utilised by MoD, we construct a simple financial model based on a current operating scenario. The Chemical, Biological, Radiological and Nuclear Physical Protection Key Strategic Partnership (CBRN PP KSP) was a year-long procurement Assessment Phase designed to test the premise that industry could support critical CBRN measures at a more economic and efficient rate than current MoD operations. The project's existence is a matter of public record and was established through open competition.[12]

Using this Assessment Phase project as a loose guide, we construct a financial model (shown in Appendix A), based on a single-year's operation which generates for industry in-year project income of £1 million. This income finances the operations of a single prime contractor that undertakes the majority of the work, employing a small, specialist sub-contractor as necessary throughout the year. Detailed assumptions underscoring the financial model and the relationship between the prime contractor and sub-contractor are listed in Appendix B, whilst the simple logic applied to our calculations is explained below:

1. Project Turnover: the project receives an income of £1 million which is matched on an accruals basis to expenditure in year. Eighty per

cent of this income falls under the terms of the contract to the prime contractor with the remaining 20 per cent forming the remuneration for the sub-contractor

2. The Prime Contractor: the prime contractor is a public company listed on the FTSE 250
3. The Sub-Contractor: the sub-contractor is a private limited company registered for trading within the UK
4. Direct Costs: these are the costs associated specifically with the contract as articulated in budgetary form during the bid stage
5. Indirect Costs: indirect costs are the prime contractor's overheads associated with the main board review of progress, the group technical director's assurance and oversight and internal corporate programme review boards. It is assumed that the salaries of those involved attract the highest rate of income tax. We include in Appendix B, note 7, an alternative assumption involving people on lower salaries being involved in the overhead functions, which means marginally less income to government
6. Income Tax: we have based our calculations on a personal allowance of £7,475. The first £2,560 of an individual's salary beyond the personal allowance is taxed at 10 per cent, the remainder up to and including £35,000 at 20 per cent and beyond £35,000 to £150,000 at 40 per cent. Income greater than £150,000 is taxed at a 50 per cent rate. It has also been assumed that a 3 per cent of salary pension contribution is made, which attracts tax relief
7. Corporation Tax: a main rate corporation tax of 26 per cent for the prime contractor has been assumed. A small profit rate of 20 per cent for the sub-contractor has been applied to our calculations
8. VAT: the standard rate of VAT from 4 January 2011 was set at 20 per cent. This has been applied to the financial model
9. National Insurance calculations: both employer and employee National Insurance rates were applied.[13]

Something significant, though perhaps unsurprising, was seen to occur. By using British businesses and conducting the work on-shore, close to 36 per cent of the government spend of £1 million was returned to the Exchequer via tax and National Insurance contributions. If a different assumption is made about the salaries associated with indirect costs (see Appendix B, note 7), the relevant figure falls, but just to 34 per cent. This is direct income to the government through tax mechanisms affecting the companies and employees concerned. Monies returned to the Exchequer are expressed proportionally against value in Table 1, and a full statement of the outcome of calculations is in Appendix A.

Table 1: Revenue accruing to the Exchequer from a £1 million project

Item	Value (£)	% of Total Government Project Income
Corporation Tax	32,840	9.0
Personal Tax	164,312	45.2
National Insurance	131,017	36.0
VAT	35,600	9.8
Total	**363,769**	**100**

By using a simple, project-based financial model in this manner, a number of key findings can be deduced. As stated, if an MoD contract of this nature is entered into with UK industry, a proportion of the value – 36 per cent – seems likely to be returned to government, offering a significant national discount to the taxpayer. Of this discount, the most noteworthy component is personal taxation, as this yields 45 per cent of total government income associated with the project. The least significant is corporation tax, which only returned 9 per cent of project income to government. However, taken together, corporation tax, personal taxation, National Insurance and VAT are powerful instruments in retaining monies under the Exchequer's control in a closed-loop financial merry-go-round between government and the UK defence industry.

'Economics'

So far the numbers presented have been those of an accountant dealing with one actual, labour-intensive project, rather than the calculations of an economist seeking to capture the impact of wider dynamics. We have deliberately ignored any estimate of the 'multiplier effects' of defence spending within the UK in terms of the revenues and profits of businesses (and tax payments) benefitting from the spending of defence industry employees in specific areas. While in some regions, such as Brough in east Yorkshire, these appear considerable, they are not easy to calculate or rather estimate,[14] and we have sought to minimise our vulnerability to the charge of over-estimating the impact of placing defence contracts within the UK.

Clearly, however, it must be recognised that, if a UK company loses defence work because a contract has been placed with a foreign supplier, it may be able to find alternative sources of revenue and profit. Also, UK defence workers who have been laid off might be able to find other sources of work that will involve them paying a comparable amount in taxation. If so, the tax revenue effects that we have discussed will be moderated or even offset by wider dynamism in the economy. However, the UK economy in 2011 was struggling to grow at all and thus any assumption that tax revenues lost from

defence contracts placed overseas would be made up from other sources should be treated as optimistic. It might be thought that the burden of proof should lie with those who prefer to live with the argument that alternative sources of tax income will be generated. It is beyond dispute that a contract placed overseas generates tax income for another government.

Also, considerations of the relative 'real' costs to the UK government of foreign and UK defence equipment should not be restricted to the initial acquisition cost, but should also take account of in-service costs. Where will spare parts be manufactured and repair and maintenance work undertaken? The government revenues associated with these expenditures are more difficult to specify because of the wide range of support activities and component manufacturers associated with sophisticated equipment. Their relevance should not be overlooked, but we have not sought to calculate them here in this initial investigation.

The Concept of Value for Money

Since the time of Michael Heseltine as Secretary of State for Defence, the MoD has treated the concept of 'value for money' as central, even though it is a subjective idea with an elusive meaning. The critic of MoD and the UK defence industry, Lewis Page, has his own clear view that 'value-for-money in defence purchasing is capability and nothing but'. However he also recognised that 'the answer ... depends on who you are'.[15] His personal preference is in line with the MoD's established internal focus on value for the defence ministry and the armed forces. The ministry, and certainly the procurement officials whose task it is to recommend contractors to ministers prior to a final decision on procurement, have been reluctant to place a value on what its decisions might mean for the wider economy. As a former MoD official, David Kirkpatrick, wrote in 2009:[16]

> The principal value of a new defence equipment project lies in its enhancement of one or more of the military capabilities of the UK's armed forces, increasing their ability to defend the nation's security and vital interests.

When decisions have been apparently influenced by considerations such as regional employment, these have been taken at the highest political level. Since the 2001 Defence Industrial Policy and the 2005 Defence Industrial Strategy, there has been debate about the defence industrial capabilities needed in-country for UK security and appropriate operational autonomy, but this is a rather separate issue from what defence does for the economy as a whole. It may also be an issue in which the current administration has little apparent interest, with the Green Paper on Equipment, Support and Technology making little reference to the defence capability implications of different industrial and technological sectors.[17]

However, as noted above, after the arrival of the coalition government in 2010, the focus of defining value solely in terms of defence capability ceased at least implicitly to be the case, with ministers arguing that the MoD had also to contribute to the wider goal of reducing the budgetary deficit. This study has not focused on the impact of defence on the economy per se, but on the impact of different sorts of decisions specifically on government finances. If some possible decisions have a more positive impact on government revenues than others, this might reasonably be an element in considerations of 'value for money' at a time when the government deficit is so prominent. This point must be seen in the light of the perception of government deficit being a matter of revenue shortages as well of government 'over-spending'.

Government Revenues, Value for Money and Procurement Strategies

The logic of our analysis suggests that there are two offerings of equal performance for a defence need, and if the government intention is to minimise the budget deficit, it would make financial sense on tax grounds alone to select a UK-sourced solution, even if it were priced up to a third more expensive than an external offering. We recognise this would not be legal under broad European public procurement law and, of course, a price differential of more than a third would make the foreign offering decisively attractive.

Clearly, if two products are not of roughly equal performance, then things get more complicated, with one key issue being the operational impact of the differences between the competing systems. However, this is a matter that can be addressed through careful control of the requirement and the assessment scheme used to assess bids. The requirement should be drawn up in such a way that the needed performance at least matches the minimum that UK forces require for operational success at an acceptable human and material cost.

This leads to recognition that the whole process of specifying requirements needs to be modified if a government moves from an expectation of being able to develop a product specifically to meet its own defined needs to a predisposition to buy 'off the shelf'. The UK has, since the introduction of Smart Procurement in 1998, used a set of processes associated with the concept of Requirements Engineering which involve the creation of User and Systems Requirement documents. These involve considerable rigour with requirements being defined individually in rigorous testable terms and with user and system requirements being closely coupled. Under a 'buy off the shelf' regime, while there would be some scope for such document generation in the early stages of a requirement's generation, there would then have to be a significant consideration of what was available in the market and of whether a competitive or sole-source approach would be used for procurement.

In the event of a competitive approach being preferred, with an established foreign product up against a still-to-be-developed UK-based offering (as was the case a few years ago in the Meteor–AMRAAM air-to-air missile competition), the calculations above suggest that the cash cost of the foreign system should be measured against the 'net cost' (price less tax revenue) of the UK-based system. This would clearly provide a degree of preference to the UK bidder, but it would not necessarily mean that the advantage would be so significant. In particular, those drawing up the assessment scheme for the project competition could opt to give a low weighting to initial acquisition price and a high weighting to technical risk. Thus the eventual significance of the tax-revenue factor would depend on how assessment schemes are drawn up.

The Allocation of Costs and Benefits: Government, the MoD and the DE&S

In wishing to be able to buy from the world market and in expressing a preference for off-the-shelf purchases, the MoD is acting in the tradition of the private British purchaser of goods and services. As Evan Davis points out, the British consumer has rarely been oriented towards support for British companies per se, preferring instead to be able to buy the cheapest product available that meets the need.[18] The MoD, however, is not like the individual consumer because the ministry is an entity in a wider body, 'the government', which receives the tax revenues associated with expenditures. This clearly raises the issue that the MoD, when it adds the national fiscal benefits of buying from home sources, may be asked to bear any extra up-front costs associated with a contract with a British firm while not receiving any of the benefits. This matter is likely to be made more acute if the DE&S is re-organised along any of the lines conceived by the chief of Defence Materiel. The three options (a trading fund, an executive non-departmental government body or a government-owned contractor-operated body[19]) would mean a procurement body having its 'own' restricted sum of money to execute a series of tasks. Consideration of the tax revenues associated with any choice of contractor is likely to be an unwelcome intrusion for such a body.

Larger Defence Contracts and the Scaling Up of the Findings

Two other obvious and related issues arise from the argument so far:

1. Would a large defence contract, such as that for the carriers, yield the same scale of tax revenues as the contract we analysed?
2. How much money in aggregate might be involved in tax payments resulting from the overall equipment programme?

Addressing the first question empirically would mean a much larger study, albeit one using the same basic approach, where the size of the foreign

content of the UK system and the salaries paid to employees engaged on the project would be important variables. We have, however, noted the high standard of qualifications and pay levels among the leading defence companies in the UK.

An estimate for the second question would depend on the aggregate of individual responses to the first, although it would certainly dwarf the £518 million that Oxford Economics reported as the BAE Systems contribution to the Exchequer in taxes.[20] The government does not publish statistics on UK defence imports and is probably not aware of the foreign content of many 'British' products. The reader is therefore invited to consider the reasonableness of some assumptions and the consequences that would follow from them. Thus we observe simply that the UK capital spend in 2010–11 was approximately £9.3 billion. If it is assumed that 20 per cent of that is already spent on foreign systems, it would leave £7.4 billion on UK and collaborative projects. If it is then assumed that 20 per cent of that balance should be deducted to covers the foreign content of British systems,[21] the balance would be just under £6 billion. Scaling up our approach, the tax revenues associated with this would be in the region of £2 billion.

What is quite clear in accounting terms, however, is that money spent on off-the-shelf foreign systems, such as the C17 and Rivet Joint, means that the government is foregoing significant tax revenues which it would have received had it expended the money involved on equipment developed and produced in the UK. From this it can be suggested that establishing buy-off-the-shelf from overseas as the basic principle for defence acquisition would make it harder to secure support from stakeholders outside the MoD for defence spending as a whole, since the tax benefits of such expenditure would be lost.

International Trade and Reciprocity

The arguments raised here ostensibly represent a challenge to much conventional economic thinking which argues for open global markets. The UK, like other members of the European Union, has just become party to the EU Defence Procurement Directive, which basically requires the UK to open up much of its defence market to companies from across the European Union. A key element of the European arrangement, however, is that British defence businesses should have more opportunities as well as challenges, because other European markets are to become more available to them. If the UK government opts for a system from a continental European firm, for which significant tax revenue will go to another European government, it will do so in the knowledge that other defence contracts should be allocated to UK firms by European governments. Since the MoD has adopted an obligation to help to reduce the budget deficit, buying from overseas when an equivalent UK product is available, even at a somewhat higher price,

would seem to make sense only if the selling state offers reciprocal access to its own market, or if the defence ministry sees itself as having no role in deficit reduction. Currently UK defence businesses struggle to sell into continental Europe, except in the context of collaborative projects, so the UK government needs to monitor carefully how others implement the European Directive on Defence Procurement.

The defence trade relationship with the US clearly operates in a different political and legal setting. While UK defence sales to the US have occurred, they have usually been accompanied by a requirement for extensive technology transfer so that the products concerned can for the most part be manufactured in the United States. It is long-standing conventional wisdom among British (and indeed European) defence businesses that firms wishing to sell to the Pentagon need either a US partner, or to invest in US facilities, on indeed both. BAE Systems, with 1,000 US employees, has opted to partner with Northrop Grumman in order to offer the Hawk to meet the US Air Force training aircraft need. Put simply, the US already insists on production arrangements that effectively mean it receives the bulk of tax revenues associated with defence procurement activities.

The Practices of Other Countries

The considerations noted here clearly apply to other states, as well as the UK, although few countries have a similar technical and managerial capability to develop defence equipment as can be found in the UK – at least for the moment. When attention is paid to other countries, it is apparent that many seek to maximise the economic benefit (jobs and tax revenues) of their defence spending by securing offsets and licensed production. It is sufficient in this briefing paper to consider the technology transfer offerings that BAE Systems and its partners feel obliged to offer as part of their sales efforts for Typhoon in Japan and India. John O'Doherty, writing in the *Financial Times*, observes that:[22]

> [A]s more countries seek to buy equipment, they are insisting – at least outside the EU – that it be built within their own borders and not imported ready-built from the UK. The cause of this rebalancing in defence employment is the explosion in the demand for offsets, a term that describes the numerous methods used by countries to ensure that an ever-higher percentage of its defence equipment budget is spent within the country itself.

The US Buy America Act, with its requirement for a US government purchase from a foreign source to be 25 per cent cheaper than its American equivalent, clearly reflects the line of logic in this piece. The US, at least formally, does not apply the Buy America Act to defence goods, but operates instead a strong preference for US-based manufacture on security-of-supply grounds. Intriguingly, the British government is currently placing less emphasis on its

traditional line of offsets, in which it seeks significant industrial participation involving work in the UK when it opts for an overseas product.

Conclusion

This analysis has implications for the way requirements are specified and assessment schemes are drawn up. Nonetheless, this is a bounded and modest piece of investigation which delivers five significant messages:

- If the MoD is to be concerned with reducing the government deficit – noting the words of the JSP 507 cited at the beginning of this study, with the guidance of the Green Book ('the need to take account of the wider social costs and benefits'[23]), and when considering UK defence offerings alongside those where most development, production and support work would be done overseas – the assessment might reasonably be conducted in terms of net prices, after the most prominent tax revenues to the government have been estimated
- Bidders should provide enough information in their submissions with regard to their supply chains to allow governmental authorities to calculate the tax consequences of their proposals
- Whatever the organisational status of Defence Equipment and Support, it needs to be directed and incentivised to take appropriate account of tax revenues
- The UK should grant access to its defence market on the principle of reciprocity
- If the UK moves to spending even a third of its capital spending on off-the-shelf foreign systems, that would represent about £1 billion less revenue for the Treasury than might have been the case.

These considerations remain relevant until the UK government considers that its deficit is no longer so problematic that the MoD must feel an explicit obligation to reduce it.

Professor Trevor Taylor is a Professorial Fellow and Head of Defence, Industries and Society at RUSI.

Dr John Louth is Senior Research Fellow and Deputy Head of Defence, Industries and Society at RUSI.

Appendix A: The Defence Pound – Financial Model (Values in £)

Item	Value	Tax	NIC	Earnings Related NIC	Govt Revenues
Invoice	**(1,000,000)**				
Prime Contractor[1]	**(800,000)**				
PBIT[2]	114,000	29,640			**29,640**
Direct labour:					
Director[3]	70,000	17,170	4,781	8,684	**30,635**
Tech Mgr[4]	52,000	10,186	4,421	6,200	**20,807**
Proj Mgr[5]	21,000	2,579	1,653	1,922	**6,154**
Proj Mgr[6]	18,000	1,997	1,293	1,508	**4,798**
Tech 1[7]	40,000	6,265	3,933	4,544	**14,742**
Tech 2	35,000	5,295	3,333	3,854	**12,482**
Tech 3	35,000	5,295	3,333	3,854	**12,482**
Tech 4	35,000	5,295	3,333	3,854	**12,482**
Tech 5	30,000	4,325	2,733	3,164	**10,222**
Tech 6	30,000	4,325	2,733	3,164	**10,222**
T&S[8]	60,000	12,000			**12,000**
Materials[9]	40,000	8,000			**8,000**
Corporate Overhead:					
Personnel[10]	176,000	63,360	6,901	23,312	**93,573**
Materials[11]	44,000	8,800			**8,800**
Sub-Contractor[12]	**(200,000)**				
PBIT[13]	16,000	3,200			**3,200**
Direct labour:					
Tech 1	100,000	28,810	5,381	12,824	**47,015**
Tech 2	50,000	9,410	4,381	5,924	**19,715**
T&S[14]	34,000	6,800			**6,800**
Total					**363,769**

Notes:

1. The prime contractor is directly undertaking 80 per cent of the work so receives £800,000 in revenue. This is agreed between the companies at the bid phase of the programme.
2. The profit before interest and tax is £114,000 based on an 18 per cent target PBIT figure.
3. The programme director is paid £70,000 per annum and is utilised exclusively on this programme.
4. The technical manager is paid £65,000 per annum and is utilised 80 per cent of his time on the programme.
5. A project manager is paid £35,000 per annum and is utilised 60 per cent on the programme.
6. Likewise a more junior project manager is paid £30,000 per annum and is utilised 60 per cent on the programme.
7. Six technicians are utilised fully on the programme paid, where indicated, between £30,000 and £40,000 per annum.
8. Travel and subsistence for the programme costs £60,000 per annum.
9. Direct materials cost £40,000 per annum.
10. Corporate Head office personnel costs equate to £176,000 full time equivalents. This is taxed at the highest rates as it relates to the most senior personnel in the business (see assumption 7 at Appendix B).
11. Indirect materials consume £44,000 per annum.
12. The sub-contractor receives 20 per cent of the invoice as income, or £200,000.
13. The sub-contractor's profit before interest and tax is £16,000 attracting corporation tax of £3,200 based on the small profit rate of CT set at 20 per cent.
14. Travel and subsistence undertaken by the sub-contractor equates to £34,000 per annum yielding VAT of £6,800.

Appendix B: Assumptions

1. Cash flows are assumed to occur within a single accounting year so there is no discrete time value of money.
2. Both accounting entities share a common accounting year and possess common accounting policies and practices.
3. The companies are both registered for tax in the United Kingdom, are in profit and, consequently, pay corporation tax where indicated in the model.
4. Employees are 100 per cent utilised by the project unless it is stated otherwise.
5. All travel and subsistence costs attract VAT.
6. A 3 per cent pension contribution applies to all employees.
7. The corporate overhead of the prime contractor applies to senior staff, at board level or equivalent, with salaries in excess of £150,000 per annum. The corporate overhead is, therefore, concerned with corporate assurance and governance. An alternative model was explored for the corporate overhead based on two salaries of £70,000 per annum and a salary of £36,000 per annum or the full-time equivalents. It was found that the changes within the model were minor but, for completeness, are offered below:

    - Direct tax yield of £39,635
    - NIC yield of £12,895
    - Earnings Related NIC of £21,222.

    This meant that the return to the Exchequer through the staff element of the corporate overhead equated to £73,752 instead of £93,573 drawn from existing assumptions. Therefore, if alternative assumptions around overhead payroll are made, the total return to the Exchequer from the model would be £343,948 instead of £363,769, or 34 per cent instead of 36 per cent.

Notes and References

1. Steven Bates *et al*, 'RAF to get 14 new Chinook helicopters in £1bn deal', *Guardian*, 22 August 2011.

2. Dan Milmo, 'AgustaWestland helicopter manufacturer cuts 375 jobs: Ministry of Defence cuts hit Yeovil factory after loss of work to Boeing', *Guardian*, 7 October 2011.

3. Liam Fox, 'The Need for Defence Reform', speech at the Royal Institute of Chartered Surveyors, London, 13 August 2011, available at <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/SofS/20100813TheNeedForDefenceReform.htm>.

4. Gerald Haworth, speech at NATO Allied Command Transformation Industry Day, London, 12 September 2011, available at: <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/MinISD/20110912NatoAlliedCommandTransformationactIndustryDay.htm>.

5. Philip Hammond told the Atlantic Council in Washington in January 2012 that 'Without strong economies and stable public finances it is impossible to build and sustain, in the long-term, the military capability required to project power and maintain defence. That is why today the debt crisis should be considered the greatest strategic threat to the future security of our nations'. See full text at <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/SofS/20120105NatoTheCaseForCollectiveDefenceInThe21stCentury.htm>.

6. HM Treasury, *The Green Book, Appraisal and Evaluation in Central Government* (London: The Stationery Office, 2003).

7. Ministry of Defence, *JSP 507: MoD Guide to Investment Appraisal and Evaluation* (London: Ministry of Defence, 2004), p. 65.

8. Oxford Economics, *The Economic Case for Investing in the UK Defence Industry* (Oxford: Oxford Economics, 2009).

9. If we assume that throughout the supply chain 80 per cent of the value of the contract ends in salaries, this would imply a figure of £800,000. Even if everyone involved in the programme was paid only £20,000 per annum, using CIMA software, the yield to the Exchequer per person would be £2,505 in income tax, £1,532 in National Insurance, and £1,784 in Employer's National Insurance Contributions, a total of £5,821. That represents 26.7 per cent of the salary element of the contract (including Earnings Related NIC) and about 21 per cent of the total programme.

10. University of Massachusetts Donahue Institute for Economic and Public Policy Research, 'The Defense Industry in Massachusetts: Current Profile and Economic Significance', December 2010, pp. 7, and 22–23. This study found that the state received $15.1 billion in defence contracts in the fiscal year 2009/10, which generated some $3.1 billion in federal, state and local taxes. According to this study, the $15.1 billion in contracts

yielded just $8.9 billion in payroll, including 'induced' jobs.

11. Tax Policy Center, 'The Tax Policy Briefing Book: A Citizens' Guide for the 2008 Elections and Beyond', the Urban Institute and Brookings Institution, 2008, available at <http://www.taxpolicycenter.org/briefing-book/background>.

12. The CBRN Key Strategic Partnership Programme for Sector transformation ran in Assessment Phase from October 2010 to December 2011, involving four companies at prime contractor level and the MoD. One of the authors had an early involvement in the development of the programme.

13. Rates are taken from HM Revenue and Customs, <http://www.hmrc.gov.uk/rates/nic.htm>.

14. The University of Massachusetts and Oxford Economics studies noted here conclude that the positive multiplier effects at least equal the employment and output impacts of the original defence contracts.

15. 'The Meaning of Value for Money', *RUSI Defence Systems* (Vol. 11, No. 3, February 2009), p. 14.

16. David Kirkpatrick, 'Value for Money in Defence Acquisition', *RUSI Defence Systems* (Vol. 11, No. 3, February 2009), p. 15.

17. This is in contrast to the Defence Industrial Strategy (2005) and the Defence Technology Strategy documents published by the Labour government.

18. Evan Davis, *Made in Britain: How the Nation Makes its Living* (London: Little, Brown, 2011).

19. Bernard Gray, 'Options for the Future Make-up of the DE&S', *Desider* (No. 42, November 2011), pp. 22–23.

20. Oxford Economics, 'The Economic Contribution of BAE Systems to the UK in 2009', final report April 2011, p. 14.

21. Private interview, 15 November 2011.

22. John O'Doherty, 'Local Pressure on Defence Groups' Global Sales', *Financial Times*, 12 October 2011.

23. HM Treasury, *op. cit.*, p. 1.

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Royal United Services Institute for Defence and Security Studies
Whitehall, London SW1A 2ET, UK

Tel: +44 (0) 20 7747 2600
Fax: +44 (0) 20 7321 0943

E-mail: trevortaylor@rusi.org
Web: www.rusi.org/