OXFORD ECONOMICS

VALUE FOR MONEY ASSESSMENT OF THE SUPPORT FOR MARITIME TRAINING SCHEME

DECEMBER 2016

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1. INTRODUCTION

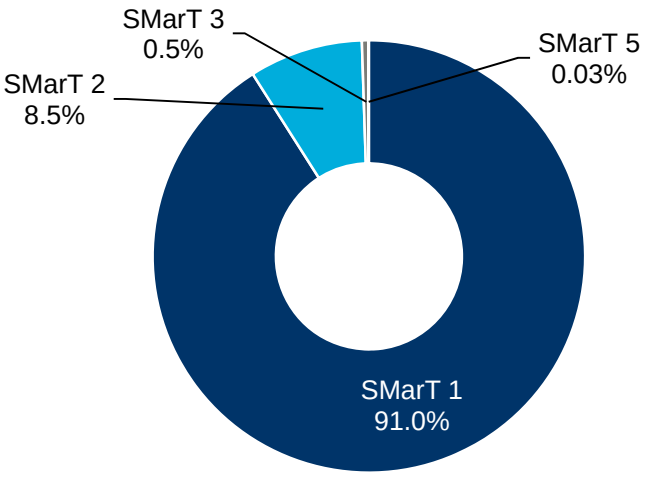
Since 1998 the UK Government has supported the training of officers, officer cadets and ratings through the Support for Maritime Training (SMarT) scheme. The aim of this scheme is to "facilitate an adequate supply of UK maritime expertise to meet the nation's economic and strategic requirements."[1]

Initially SMarT funding was divided into five categories (1, 2, 3, 4, 5). Together, these categories funded training towards first and second certificates of competency, watch rating training, rating to officer conversions, and conversions to the updated STCW '78.

In the 2011/2012 financial year SMarT was streamlined into three categories (1, 3 and 5) and funding was fixed at £12 million per year until 31 March 2015. In September 2013 it was announced that the funding available for SMarT would increase by £3 million per year up until the end of March 2016. This increased the SMarT budget to £15 million per year, enabling the reintroduction of SMarT 2 and expanding the scope of SMarT 3 to support additional ancillary training courses.

This value for money assessment examines the economic impact of the SMarT scheme over the period 2011/12 to 2015/16. During this period, the SMarT scheme drew down and spent £64 million in funds. The vast majority of these funds were allocated to SMarT 1, as shown in the chart below.

Fig. 1. Allocation of SMarT funding, 2011/12 to 2015/16



Source: Oxford Economics, MCA

[1] Maritime and Coastguard Agency, "Guidance Support for maritime training (SMarT)", in *https://www.gov.uk* <https://www.gov.uk/guidance/support-for-maritime-training-smart> [accessed 13 October 2016]

This report estimates a benefit to cost ratio (BCR) of the SMarT 1 scheme (Chapter 2). It also provides a discussion of the costs and outputs of SMarT schemes 2, 3 and 5 (Chapter 3).

We have taken this approach for three reasons. Firstly, SMarT 1 accounts for 91 percent of all SMarT funding, suggesting that this is the area where most analytical effort should be deployed. Secondly, the additional outputs and outcomes supported by SMarT 2 are slightly unclear, partly due to a lack of clear trends in the data pertaining to those completing SMarT 2 –funded training, and partly because it is difficult to disentangle the benefits from those identified for SMarT 1. Finally, the main benefits of SMarT 3 and 5 cannot easily be monetised and are best considered through a more qualitative assessment. There is therefore a discussion of these schemes in Chapter 3.

2. VALUE FOR MONEY ASSESSMENT OF SMART 1

2.1 COSTS

2.1.1 Introduction and concepts

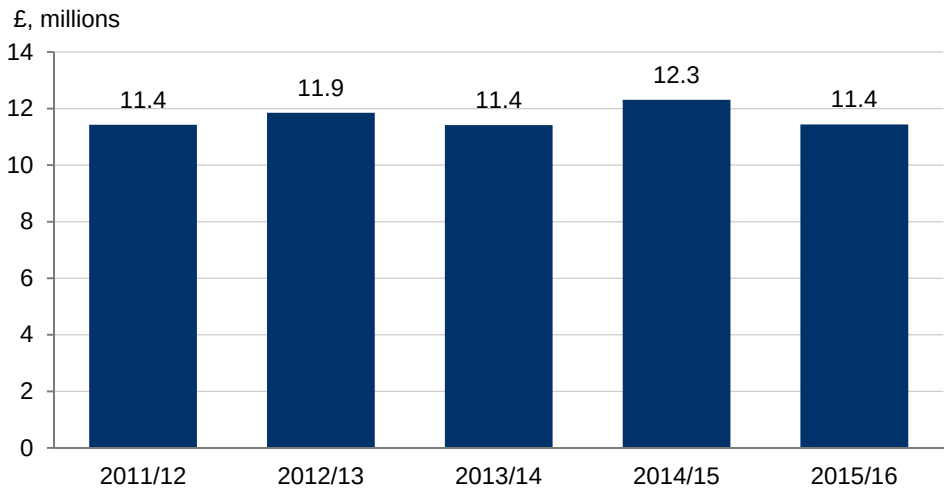
The aim of this value for money assessment is to estimate a benefit cost ratio (BCR) for SMarT 1 from a broad economic perspective, based on an assessment of costs and benefits not just to government, but to the UK economy as a whole.

2.1.2 Public costs

Data on the costs of SMarT 1 over the review period were provided by the Maritime & Coastguard Agency (MCA). As shown in Fig 2, these data detail the costs incurred by SMarT 1 for each financial year over the review period. In total, £58.4 million was spent on SMarT 1 from 2011/12 to 2015/16. Annual expenditure ranged from £11.4 million to £12.3 million per year. Noticeable in the chart below is the increase in funding between 2013/14 and 2014/15, reflecting the £2.4 million increase in the SMarT budget in the latter year.

In line with the scheme's remit, SMarT 1 funding was made available to shipping companies to subsidise the costs of supporting trainee officers to obtain their first Certificate of Competency (CoC 1) in either deck, engineer or electro-technical capacities.

Fig. 2. SMarT 1 funding over the review period



Source: Oxford Economics

The exact funding formula for SMarT 1 has varied over the review period:

- From August 2012, first year trainees received £80 per week for weeks 1 to 50. Second and third year trainees (weeks 51 to150) received

£110 per week and then a final payment of £2,950 upon completion of a final interview.
- From August 2013, first year trainees received £80 per week for weeks 1 to 50. Second and third year trainees (weeks 51 to 150) received £100 per week and then a final payment of £2,950.
- From 24 March 2014, first year trainees received £86 per week for weeks 1 to 50. Second and third year trainees (weeks 51 to 150) received £107 per week and then a final payment of £3,156.

The average total amount of funds made available for the training of each cadet over the review period was £17,801.[2]

2.1.3 Non-public costs

To estimate the total costs of SMarT 1, we also need to estimate the costs incurred by shipping companies in the training of seafarer officer cadets. Information on these costs was gathered from two main sources:

- Consultations with major UK shipping companies and seafarer training organisations. These consultations incorporated detailed questions about the costs incurred by companies during the training of cadets. The companies interviewed included: Pritchard Gordon Tankers, Maersk Crewing Ltd, Ship Safe Training Group (SSTG), Chiltern Maritime, V Ships, Clyde Marine and Princess Cruises.
- Analysis carried out by the Merchant Navy Training Board (MNTB), based on consultations with the largest seafarer training companies within the UK. These companies included SSTG, Clyde Marine and Chiltern Maritime. In recent years collectively these companies have trained about 70 percent of cadets in the UK.

Analysis of the data from these sources allowed us to estimate ranges for the costs companies are likely to incur when training cadets over a three-year period. The 'low' costs presented in Fig 3, below, reflect the lowest amount quoted by companies under each of the cost categories, while the 'high' category reflects the highest amount quoted.[3] The 'average' category reflects an average of all the cost estimates, weighted by the number of cadets trained by each organisation.[4]

[2] This is an average of the three funding formulas detailed above. It is weighted by the number of cadets companies drew down funds for under each funding formula over the review period.

[3] 'Low' and 'high' costs do not reflect the lowest and highest total costs submitted, but rather reflect a collection of the lowest and highest costs on an item by item basis.

[4] For companies which responded to both this study and the MNTB work, we take an average of the two estimates provided.

Fig. 3. Cost of training a cadet[5]

Costs	Low	Average	High
Training berth costs	2,373	4,736	5,475
Ancillary costs (travel, visas, medical, etc.)	2,760	4,935	6,600
Uniform	450	714	900
Training allowance	22,800	24,188	27,000
Management/company costs, including recruitment	2,046	5,000	8,509
Tuition costs	10,500	19,577	23,117
Total costs	**40,928**	**59,150**	**71,601**

Source: Consultation (see above for details), MNTB, Oxford Economics

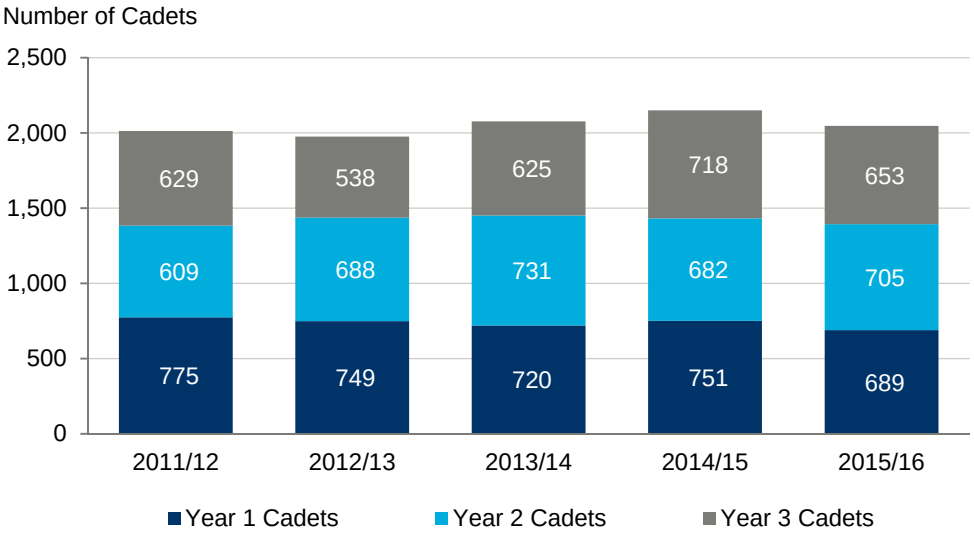
Training berth costs refer to the cost of keeping cadets on board a ship during their at-sea training periods, such as to pay for their food and drink. The training allowance is a sum of money provided to cadets to help pay for the basic cost of living during their training. Management / company costs are the cost equivalent of the amount of time companies have to set aside recruiting cadets and managing them through their training.[6]

Based on data provided by the MCA, Oxford Economics has developed estimates of the number of cadets in training each year over the course of the review period, as shown in Fig 4. These data reflect the number of cadets that completed that particular year of training and exclude drops-outs. As such, the number of cadets that completed Year 1 in 2011/12 is less that the number that completed Year 2 in 2012/13 because some of the cadets will have dropped out in Year 2, for example. Oxford Economics calculated the drop-out rate for each cohort of cadets trained over the review period from data on the number of starters and completers for each cohort. Drop-out rates are estimated from analysis of data for 2014/15 and 2015/16 showing the number of Year 1, 2 and 3 drop-outs.

[5] SMarT funding is given directly to companies to subsidise the total cost of training cadets. Therefore SMarT funding is included within the total cost calculation.

[6] In many cases the companies consulted for this study were unsure of the exact amount of time that staff spent managing cadets. However, the MNTB were able to provide a complete estimate. We have therefore taken the MNTB figure as the average estimate, and used the partial data collected from the consultations to form a range around this average.

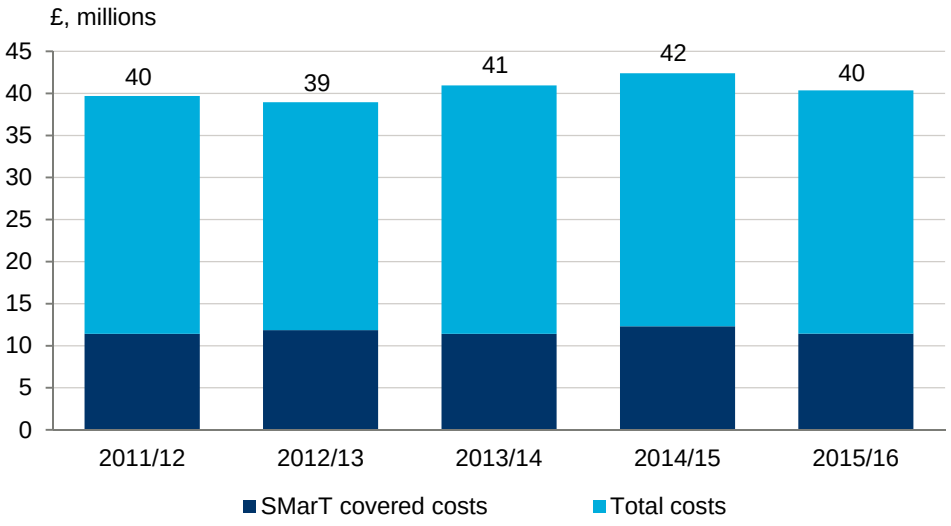
Fig. 4. Number of cadets in training over the review period



Source: Oxford Economics, MCA

Based on the average total cost of training and our estimate of the total number of cadets trained, we are able to estimate the total amount companies spent on training cadets over the review period (see Fig 5). Across the five years we estimate that companies spent a total of £202 million on cadet training, with SMarT 1 funding covering 29 percent of these costs.

Fig. 5. Total costs of training cadets, 2011/12 to 2015/16



Source: Oxford Economics

2.2 BENEFITS TO THE UK ECONOMY

2.2.1 Introduction

To estimate a benefit-cost ratio (BCR) we need to compare the costs estimated in the previous section with an estimated value of benefits generated by the scheme. In assessing the benefits of SMarT 1 we are ultimately trying to understand the economic value generated by SMarT 1 for the UK economy. We measure this in terms of the gross value added contribution to UK GDP of the seafarers trained through SMarT.[7]

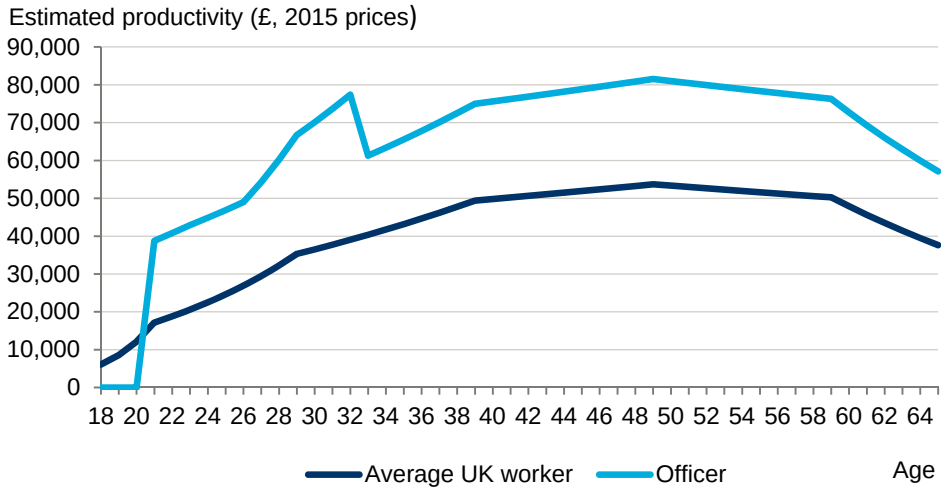
2.2.2 Benefits of SMarT 1

To assess the economic value generated by SMarT 1 we estimate the productivity (or gross value added contribution) of each seafarer officer that SMarT 1 helped to train. We then compare this estimated productivity contribution to that of an average UK worker over the course of a working life to estimate the *net* productivity contribution of an officer, over and above that of a typical worker.[8]

Using a combination of data from the consultations and official statistics, we have produced estimated profiles of the average productivity contribution of a 'typical' officer seafarer and the average UK worker over the course of their working lives (see Fig 6). The difference between the two estimates in each year tells us the net contribution of a seafarer to the UK economy in that year. We can also sum across all years to obtain a total value for an entire working life. On this basis we estimate that the average officer seafarer generates £1.1 million more value added than an average worker over the course of their career.

[7] The gross value added contribution to GDP measures the contribution to the economy of each individual producer, industry or sector. It is a measure of output and is aggregated across all industries or firms to form the basis of a country's Gross Domestic Product (GDP), the main measure of the total level of economic activity.
[8] We have assumed that an individual's working life starts at the age of 18 and ends at the age of 65.

Fig. 6. Estimated lifetime productivity contribution of a seafarer officer and an average UK worker – central estimate



Source: Oxford Economics

The main assumptions underpinning this analysis are as follows:

- The average productivity contribution of an average UK worker across the course of their working life is based on average earnings by age group for all workers in the economy, from the Annual Survey of Hours and Earnings.[9,10]
- The productivity contribution of the average officer seafarer across the course of their working life is based on wage data for various ranks of officer seafarers, collected from the consultations and recruitment websites.[11]
- Wages are scaled up to productivity estimates based on a comparison of average wage and productivity levels. Productivity estimates were taken from Oxford Economics' in-house UK economic model.
- We assume that, on average, a seafarer moves to an onshore role after spending 15 years at sea (including training). This is based on survey evidence from a report by the European Community Shipowners' Associations and the European Transport Workers' Federation, and feedback from consultations undertaken for this study.[12] This move typically results in a reduction in earnings, which is reflected in the step down in productivity observed after the age of 32 in the chart above.

[9] Ages 18-21 (£10,190), Ages 22-29 (£20,933), Ages 30-39 (£29,307), Ages 40-49 (£31,858), Ages 50-59 (£29,816) and Ages 60+ (£22,325). Interpolation has been used to obtain a smooth trend.

[10] Wages and productivity are closely linked. Over the past 16 years, average wages have remained around 63 percent of average productivity. When we look at individual years there are only slight deviations from this average.

[11] Officer Seafarer Wages: 4th Officer (£25,454), 3rd Officer (£29,062), 2nd Officer (£39,589),1st Officer (£45,900) and Captain (£71,250)

[12] European Community Shipowners' Associations and European Transport Workers' Federation, "Maritime Career Path Mapping 2013 Update" (Report), 92.

- We assume that once a seafarer has moved to a role onshore, their productivity is equivalent to that of an average worker in the maritime cluster.
- No data are available to trace the career paths of seafarers after they finish working at sea. As such, we assume that they either work in the maritime cluster, or do another job with a similar level of productivity. For our analysis to hold it does not matter whether a former seafarer actually works in the maritime cluster, so long as they're doing a job with a similar level of productivity. In essence we are using the maritime cluster productivity estimate as a proxy for the extent to which former seafarers earn more than the average UK worker once coming onshore. We think this assumption is reasonable given the skills and experience of former officers, many of which will have had high levels of responsibility at sea. In addition, the Oxford Economics UK seafarer projections report found that employers in the maritime cluster reported that they find it difficult to recruit former officers.[13] Given this apparent shortage, it would seem logical that former officers are moving into jobs with wage (and therefore productivity) levels which are at least in line with roles in the maritime cluster.
- This productivity estimate is based on a previous report on the maritime cluster by Oxford Economics, and is estimated by dividing the gross value added contribution of the cluster in 2013 by number of people employed within it.[14][15][16]

As noted above, we assume that a typical seafarer will move on shore by their early-thirties and start working in a role onshore. Under these assumptions we estimate that of the additional £1.1 million value added each officer contributes to the UK economy, £298,000 is generated working in a role at sea and £831,000 is generated working onshore.

To calculate the total economic contribution of the SMarT 1 scheme, we multiply the results for the lifetime benefit for each seafarer by the number of cadets who completed SMarT 1 funded training and received their COC 1 during the study period.[17] On this basis we estimate that the net contribution of SMarT 1 to the UK economy is £2.6 billion. This is the sum of the annual contributions shown in the chart below.

[13] Oxford Economics, "UK Seafarers Projections", 2016

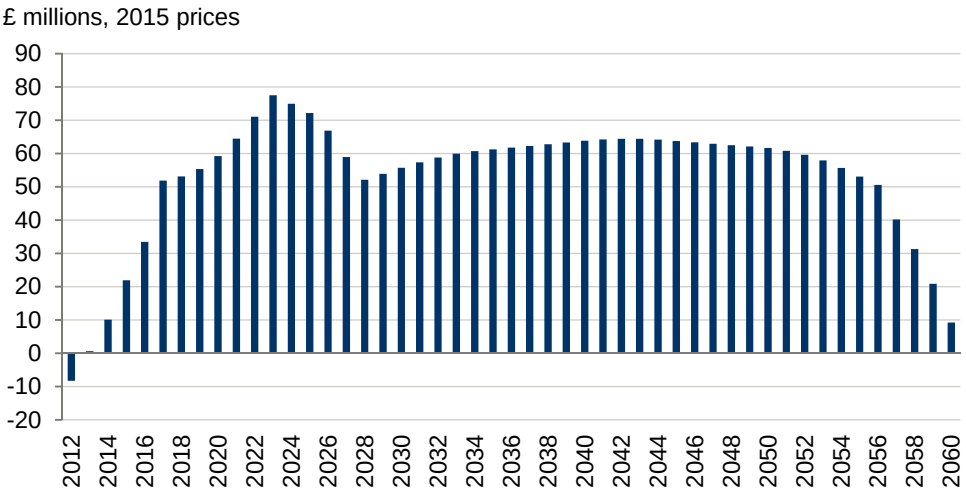
[14] Oxford Economics, "The economic impact of the UK Maritime Services Sector", 2015

[15] The activities of the maritime cluster includes that activities of ports and maritime business services.

[16] Average productivity levels in the maritime cluster have been adjusted to reflect the differences in pay across age groups. The proportional differences are assumed to be the same as an average UK worker.

[17] Oxford Economics has based the number of cadets who received their COC 1 during the review period on the number of SMarT 1 final payments claimed over the review period. Overall, this number is 26 percent lower than the number of cadets who completed their third year of training over the same period, implying that 74 percent of cadets who completed the three years of training go on to pass their final exam and receive their COC 1. This value appears conservative, given that cadets have invested three years of their life to pass this exam, and there may be reasons why this figure is an underestimate. For example, cadets may fail the exam the first time and retake it at a later date or companies may not claim the final payment. However, since we do not have the information to state for certain how may SMarT 1 funded cadets received their COC 1 over the review period we have opted to use the conservative figure of the number of final payments claimed to avoid overstating the benefits of this scheme.

Fig. 7. Gross valued added contribution of SMarT 1 – central estimate

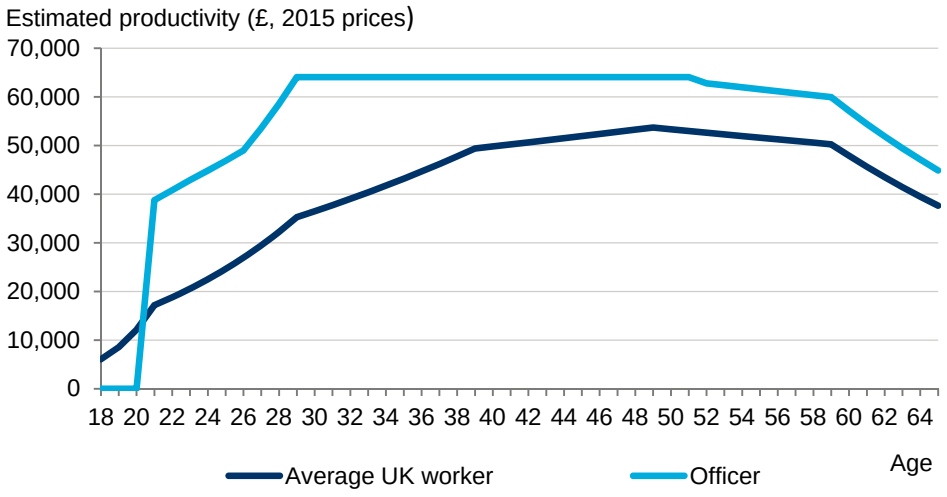


Source: Oxford Economics

In line with standard practice in this type of evaluation, it is important to consider alternative scenarios to assess the extent to which our findings are sensitive to the assumptions made.

One possibility is that an officer does not progress past COC 1 and as a consequence their wages and productivity reach a 'ceiling' after an initial period of career progression. In this scenario we also assume that the seafarer does not move to an onshore role.

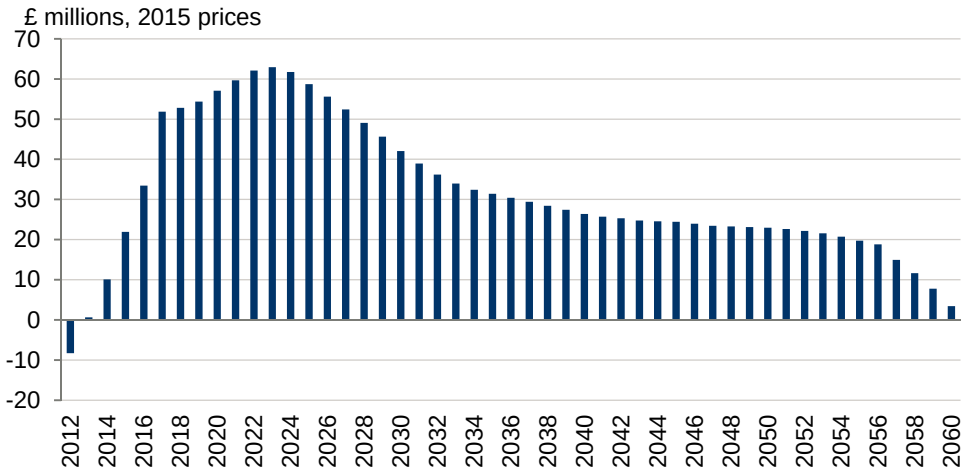
Fig. 8. Estimated lifetime productivity contribution of a seafarer officer and an average UK worker – low estimate



Source: Oxford Economics

If all seafarers trained under SMarT 1 followed this career profile, the net benefit to the UK economy would be £1.5 billion, and the profile of benefits is as shown below.

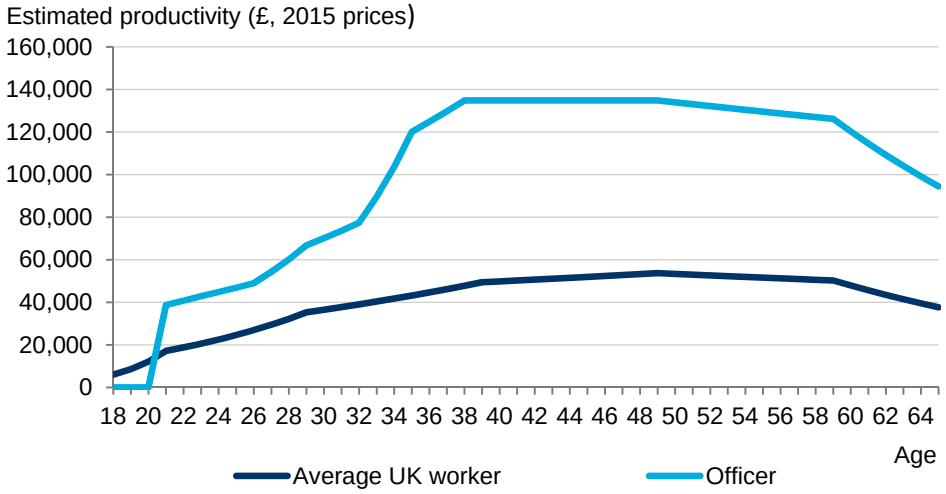
Fig. 9. Gross valued added contribution of SMarT 1 – low estimate



Source: Oxford Economics

A high scenario could be that a seafarer does not come ashore but progresses through the ranks to captain and remains in that position until they retire.

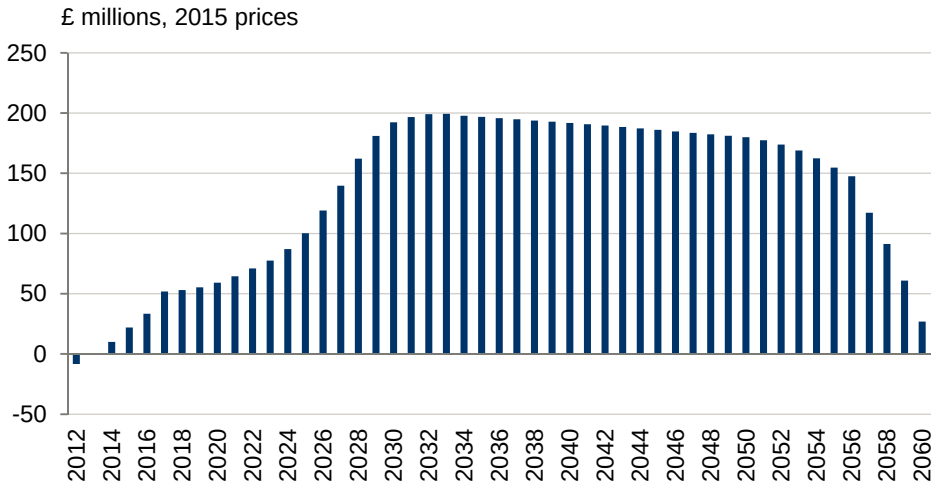
Fig. 10. Estimated lifetime productivity contribution of a seafarer officer and an average UK worker – high estimate



Source: Oxford Economics

Under this scenario, SMarT 1's net benefit to the UK would be £6.7 billion.

Fig. 11. Gross valued added contribution of SMarT 1 – high estimate



Source: Oxford Economics

To finalise our estimates, and consistent with Green Book guidance, we need to apply a 'discount rate' to the future streams of benefits presented above, to reflect that people tend to place a higher value on benefits received in the present day rather than in the future. This process converts our estimates into 'present values'.

In line with the Green Book, we apply a discount rate of 3.5 percent for benefits which accrue over the next 30 years, and a rate of 3 percent is used for later years.

After discount rates have been applied, the possible net benefit of the SMarT 1 scheme are as shown in the table below (Fig 12). In present value terms, we estimate the scheme generated benefits of between £960 million and £3.1 billion, with a central estimate of £1.4 billion.

Fig. 12. Net benefit discounted values

Low	Central	High
£ millions	£ millions	£ millions
957	1,401	3,137

2.3 ASSESSMENT OF ADDITIONALITY

2.3.1 Introduction

To understand the net impact of a government intervention, we must make an assessment of 'additionality', to understand the extent to which the SMarT 1 scheme may have generated benefits over and above what would have

happened anyway.[18] The following sections describe the adjustments we make to our findings to assess this additionality.

2.3.2 Deadweight

Deadweight can be defined as "the proportion of total outputs/outcomes that would have been secured without the investment in question."[19]

In the context of SMarT 1 we need to define a plausible counterfactual scenario which details the number of cadets that could have been trained by the end of the assessment period if SMarT 1 had not been implemented.

In the previous evaluation of SMarT 1, it was estimated that, in 2010, 200 additional cadets were trained as a result of SMarT and 650 cadets who received SMarT 1 funding would have been trained regardless of whether the SMarT funding was available. This gave a deadweight of 77 percent. That is, 77 percent of the benefits of SMarT would have been realised in the absence of government funding.[20] This counterfactual was based on the principle that if SMarT funding did not exist, companies registered for tonnage tax would still meet their tonnage tax obligations of training one cadet for every 15 officer posts on the vessels they operate.[21]

Since the previous review was completed, new evidence has emerged which enables us to develop a counterfactual scenario under a slightly different approach.

In 2012 the cap on tuition fees in England was increased for new undergraduate students. This led to a 94 percent increase in the average cost of officer cadet tuition between 2011/12 and 2012/13.[22] The increase in tuition costs would have increased the total cost of training per cadet by approximately 19 percent, assuming all other training costs remained unchanged. In that same period the number of SMarT 1 new entrants dropped by 13 percent, indicating that the number of cadets that companies are willing to train is closely correlated to the total costs of training a cadet. This experience suggests that for every one percent increase in the cost of training there is a 0.7 percent drop in the number of cadets trained. If we consider this relationship in relation to SMarT funding, we could say that since SMarT covers, on average, 29 percent of the total cost of training, if SMarT funding had not been available over the review period then the 20 percent of cadets would not have been trained. This implies that the deadweight associated with

[18] A full discussion on the key components of additionality and how they are all brought together can be found in the following BIS report: Department for Business Innovation and Skills, "Research to improve the assessment of additionality", *BIS OCCASIONAL PAPER NO. 1*, October 2009, 65.

[19] Page 23 of the Department for Business Innovation and Skills, "Research to improve the assessment of additionality", *BIS OCCASIONAL PAPER NO. 1*, October 2009, 65.

[20] Deloitte and Oxford Economics, "An independent review of the economic requirement for trained seafarers in the UK" (Evaluation, 2011), 125.

[21] We attempted to update this assumption for the current study, but it was not possible to obtain the information required relating to shipping companies' participation in tonnage tax.

[22] The increase in average tuition fees is assumed to be equal to the percentage increase in tuition fee for Warsash Maritime Academy between 2011/12 and 2012/13.

the scheme would be in the region of 80 percent – slightly higher than the 77 percent assumed in the previous study.

However, evidence gathered from the consultations provides some tentative suggestion that deadweight may be lower than previously estimated. Companies were asked how many cadets they would have trained last year if SMarT funding were not available. Of the seven companies we talked to, four said they did not know, two said they would train no cadets and one company said they would have trained 40 to 60 percent fewer cadets. The small number of respondents to this question makes it difficult to draw firm conclusions, but it does provide a tentative indication that deadweight may be lower than the 77 percent previously estimated.

Given the importance of the deadweight assumption, it is our view that we should consider a high, central and low range of deadweight values in this evaluation. Our central scenario therefore assumes that deadweight aligns to the previous evaluation of 77 percent, while a more positive scenario assumes a lower estimate of deadweight of 50 percent, based the evidence gathered from the consultations which would seem to indicate at the most a medium level of displacement.[23] For our pessimistic scenario we assume a deadweight value of 80 percent, based on the situation observed when the cost of training increased in 2012/13.

2.3.3 Leakage

Leakage is defined as "the proportion of outputs/outcomes that benefit those outside the target area of the intervention".[24] In the case of SMarT 1, this refers to cadets which train under the SMarT scheme, but subsequently go to work elsewhere in the world.

Analysis of detailed responses to the UKCoS manpower surveys suggests that the number of UK officers joining the industry between mid-2014 and mid-2015 was broadly in line with the number of officer cadets gaining certification in that year. We therefore assume that a low proportion of the officers trained through SMarT leave the UK shipping industry to work overseas. In the absence of better information, we have assumed leakage to equate to 10 percent.[25]

2.3.4 Displacement

Displacement is "the number or proportion of outputs/outcomes that reduce outputs/outcomes elsewhere in the target area for the intervention."[26] We have found no evidence that other significant funding sources were displaced by

[23] This is also consistent with the deadweight ready reckoner presented in the 'Additionality & Economic Impact Assessment Guidance Note' published by Scottish Enterprise in 2008, which states the medium level of deadweight can be assumed to equate to 50 percent.

[24] Page 12 of the Department for Business Innovation and Skills, "Research to improve the assessment of additionality", *BIS OCCASIONAL PAPER NO. 1*, October 2009, 65.

[25] Once again, this is consistent with the ready reckoner provided by Scottish Enterprise in "Additionality and Economic Impact Assessment Guidance Note" (Guidance Note, 2008).

[26] Page 12 of the Department for Business Innovation and Skills, "Research to improve the assessment of additionality", *BIS OCCASIONAL PAPER NO. 1*, October 2009, 65.

SMarT 1 over the review period and have therefore assumed displacement to be zero.

2.3.5 Substitution

Substitution is defined "as a negative effect that arises when a firm substitutes a jobless person to replace an existing worker to take advantage of the public sector assistance."[27] There is no evidence of substitution occurring in the context of SMarT 1 and we assume it to be zero.

2.3.6 Net additional impact

Net additionality is the net amount of benefits that have been generated by a government intervention after the deadweight, leakage, displacement, and substitution effects described above have been taken into account. The calculation of this can be summarised in the table below.

Fig. 13. Net additional impact of SMarT 1

Scenarios	Low	Central	High
Gross Impact (£ millions)	957	1,401	3,137
Deadweight	80%	77%	50%
Leakage	10%		
Displacement	0%		
Substitution	0%		
Net Additional Impact (£ millions)	173	290	1,412

2.4 BENEFIT COST RATIO

The BCR compares our estimated value of benefits to that of costs. To estimate a BCR we must compare the present value of benefits to the present value of costs to the transport budget. The present value of the scheme is the net additional impact of SMarT less the net additional private sector cost (which equal the private costs incurred over the evaluation period minus the costs incurred under each scenario's counterfactual.)

As stated in the previous section, the public cost of SMarT 1 over the review period was £58 million. However, we must also consider whether the cadets who have graduated from SMarT 1 received any further public funding during the review period. Under our central and high scenarios we assume that all cadets gain their second Certificate of Competency (COC 2). It is very likely that the cadets graduating in 2011/12, 2012/13 and 2013/14 would have received support via SMarT 2 funding (the companies training them would have claimed this support). We therefore include the public costs (£5.5 million) of SMarT 2 over the review period in the central and high scenario BCR calculations. There is further discussion of SMarT 2 in the next chapter.

[27] Page 12 of the Department for Business Innovation and Skills, "Research to improve the assessment of additionality", *BIS OCCASIONAL PAPER NO. 1*, October 2009, 65.

On this basis we estimate that for every £1 spent on training cadets there was a £4.8 return to UK GDP, in our central scenario.

Fig. 14. Benefit to cost ratio

Scenarios	Low	Central	High
Net Additional Impact (£ millions)	173	290	1,412
Private Costs (£ millions)	144	144	144
Counterfactual costs (£ millions)	162	156	101
Present value of benefits (£ millions)	**191**	**302**	**1369**
SMarT 1 Costs (£ millions)	58	58	58
SMarT 2 Costs (£ millions)		5	5
Present value of costs to transport budget (£ millions)	**58**	**63**	**63**
BCR (£)	**£1 Cost :£3.3 Benefit**	**£1 Cost :£4.8 Benefit**	**£1 Cost: £21.6 Benefit**

Our central BCR aligns to the previous evaluation's BCR which estimated that each £1 of cost supported £4.80 of benefits.

2.5 SENSITIVITY ANALYSIS

To gauge the impact certain assumptions can have on the final BCR we have undertaken further sensitivity analysis around some of the key assumptions.

We have assumed that if officers had not become seafarers they would have become an average UK worker. An alternative assumption to this could be to assume they become and average worker in the transportation sector, which has a higher average wage than the UK average (Fig 15). In this case the central BCR falls to £1 Cost:£4.5 Benefit.

Fig. 15. Benefit to cost ratio – transport worker counterfactual

Scenarios	Low	Central	High
Present value of benefits (£ millions)	124	234	1,290
Present value of costs to transport budget (£ millions)	41	52	106
BCR (£)	£1 Cost :£3.1 Benefit	£1 Cost :£4.5 Benefit	£1 Cost :£12.7 Benefit

Given the highly paid nature of seafaring officers, we might assume that instead of becoming a seafarer workers found a profession that paid the average wages of the top 30 percent of workers in the UK (Fig.16). In this case most of the wage uplift assumed from training is eradicated, leading to a central BCR of £1 Cost:£1.4 Benefit.

Pushing this assumption even further, if we were to assume that instead of becoming a seafarer workers found a profession that paid the average wages of the top 27 percent of workers in the UK, the BCR under the central scenario falls to: £1 Cost :£1 Benefit.

However, we do not consider either of these assumptions to be the most likely representations of reality. This is especially true when considering impacts under the low scenario, since the low scenario assumes that seafarers do not progress beyond COC 1. Therefore, you are effectivity saying that had a worker not become a seafarer and remained at COC 1 level for their entire career they would instead have taken up a job that would have placed them in the top 27 or 30 percent of earners in the UK.

Fig. 16. Benefit to cost ratio – top 30 percent worker counterfactual

Scenarios	Low	Central	High
Present value of benefits (£ millions)	11	96	914
Present value of costs to transport budget (£ millions)	64	69	69
BCR (£)	£1 Cost :£0.2 Benefit	£1 Cost :£1.4 Benefit	£1 Cost :£13.2 Benefit

Another key assumption we have made is to value the benefits from SMarT over the working like of each officer as opposed to the 20 year period used in the previous evaluation, Fig 17 show the BCR's when we only consider benefits over a 20 year period. Under this assumption, the central BCR falls to £1 Cost: £3.0 Benefit, which is lower than in the 2011 study.

Fig. 17. Benefit to cost ratio – 20 years of benefits

Scenarios	Low	Central	High
Present value of benefits (£ millions)	163	210	748
Present value of costs to transport budget (£ millions)	64	69	69
BCR (£)	£1 Cost :£2.5 Benefit	£1 Cost :£3.0 Benefit	£1 Cost :£10.8 Benefit

Finally, under our central scenario we estimate the benefits seafarers bring to the UK economy when they come onshore as well at sea. If we were to remove the benefits a UK seafarer will potentially generate onshore the BCR for the central scenario falls to: £1 Cost :£2.1 Benefit.

Fig. 18. Benefit to cost ratio – no cluster benefits

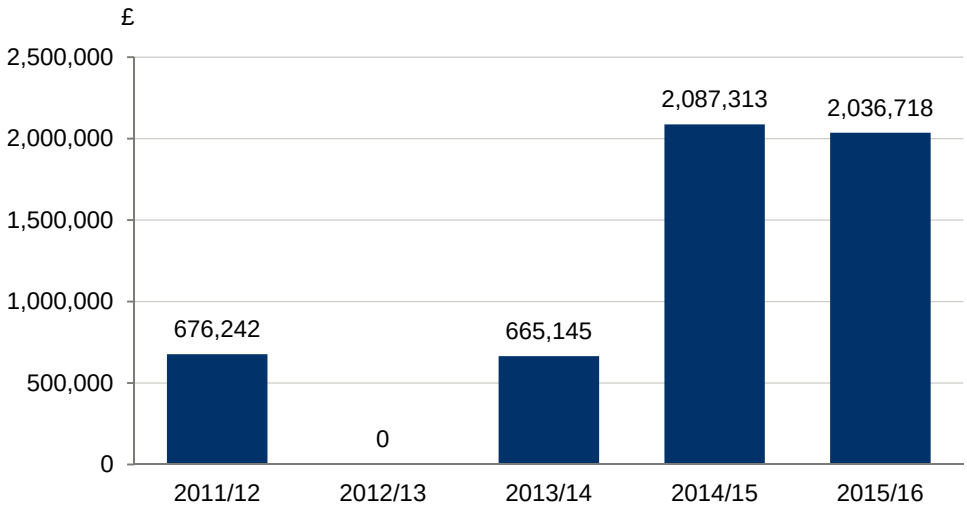
Scenarios	Central
Net Additional Impact (£ millions)	122
Private Costs (£ millions)	144
Counterfactual costs (£ millions)	156
Present value of benefits (£ millions)	**134**
SMarT 1 Costs (£ millions)	58
SMarT 2 Costs (£ millions)	5
Present value of costs to transport budget (£ millions)	**63**
BCR (£)	**£1 Cost :£2.1 Benefit**

3. VALUE FOR MONEY ASSESSMENT OF SMART 2, 3 AND 5

3.1 SMART 2

SMarT 2 funds officers training towards their second Certificate of Competency (COC 2). In total, £5.5 million of funds was allocated to SMarT 2 between 2011/12 and 2015/16. The bulk of this funding was delivered in the latter part of the period, with 75 percent of funding being drawn down in 2014/15 and 2015/16. This reflects that SMarT 2 funding was removed in 2012/13 in an effort to streamline the SMarT program, but was later reintroduced in 2014/15.

Fig. 19. SMarT 2 funding over the review period



Source: Oxford Economics, MCA

In terms of the funding formula, the maximum amount of funding available per officer amounted to £9,303. This was broken down into three instalments over the year:

- 1st instalment: £4,560
- 2nd instalment: £2,280
- 3rd instalment: £2,463

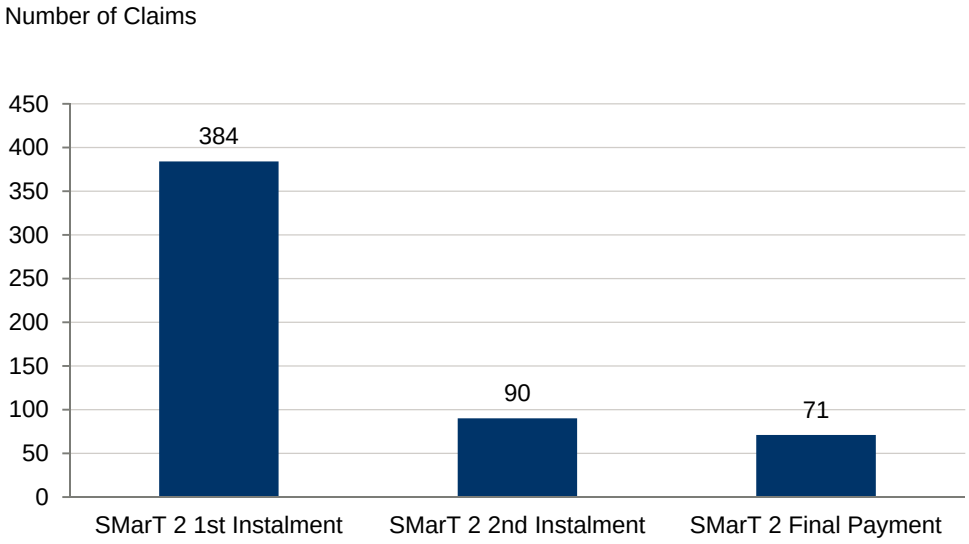
One of the key issues in evaluating SMarT 2 is the ambiguity surrounding the number of officers it successfully helped achieve their COC 2. Fig 20 shows the number of people claiming instalments in 2015/16. Noticeable is the large drop between the number claiming the first and second instalments.

It is likely that a large proportion of SMarT 2 first instalment claimants are officers who are completing a HND as part of their cadet training to achieve their COC 1. The HND course goes beyond the academic requirements to achieve a COC 1 and fulfils part of the requirement for officers to move from COC 1 to COC 2. So while cadets training to achieve a COC 1 will have been subsidised by SMarT 1 for most of their training, the final academic training for

the HND can be covered by SMarT 2. The second or third instalment of SMarT 2 are not claimed for these cadets.

However, it would not be right to assume that the 71 third instalment claimants are the total number of SMarT 2 funded COC 2 graduates since this does not account for the proportion of companies that may have only partially claimed SMarT 2 funding to help to pay for COC 2 training. In reality, the number of COC2 graduates which benefitted from SMART 2 funding is likely to lie somewhere between 71 and 384, but in the absence of other information it is not possible to be more precise.

Fig. 20. Number of SMarT 2 claims in 2015/16



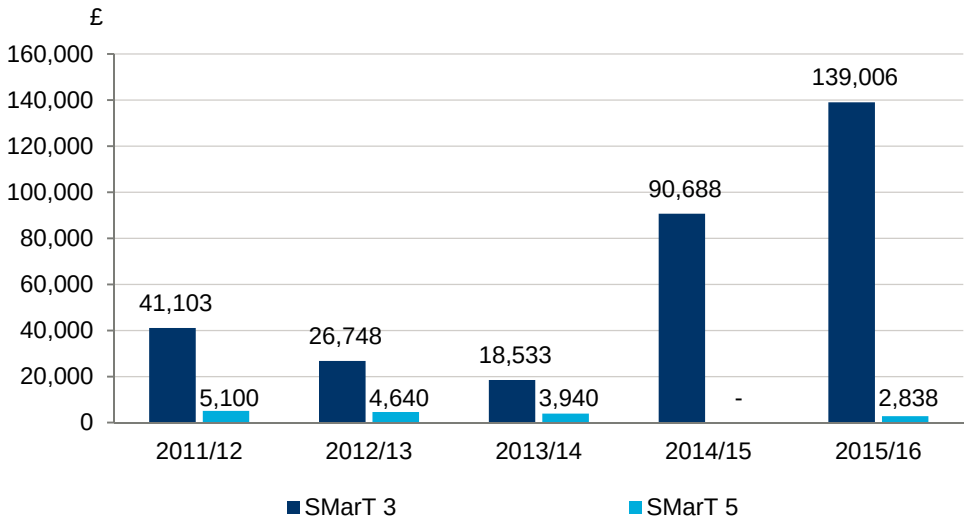
Source: Oxford Economics, MCA

A further complexity arises from the difficulty of disentangling the benefits of SMarT 2 from those of SMarT 1. In reality many of those obtaining their CoC 1 go on to obtain their CoC 2, and will go on to the sort of career path set out in Section 2. We therefore assume that both the costs and benefits of SMarT 2 are already fully captured within the analysis of SMarT 1 set out in Section 2.

3.2 SMART 3 AND 5

The collective amount of funding allocated to SMarT 3 and 5 from 2011/12 to 2015/16 amounted to £333,000, equalling 0.5 percent of the total SMarT budget over that period.

Fig. 21. SMarT 3 and 5 funding over the review period



Source: Oxford Economics, MCA

The vast majority (71 percent) of SMarT 3 and 5 funding went to support for seafarer ratings. Our research, based on wage levels, indicates that the average rating is not more productive that the average UK worker and therefore the kind of analysis used to assess SMarT 1 cannot be applied here.

However, this does not mean that there is no rationale for government support to the training of ratings. It is rather that the rationale relies on factors which are more difficult to quantify. Ratings seafarers are essential for the safe navigation of ships and play a vital role in supporting the smooth operation of the UK shipping industry, which is of strategic importance to the UK. This strategic importance relates to the industry's role in terms of enabling international trade and providing access to outlying areas and neighbouring countries (in the case of ferries).

Moreover, having a complete UK national seafaring labour force, which includes ratings, provides government with strategic alternatives in uncertain times. Merchant Navy ratings employed by the Royal Fleet Auxiliary play a vital role in providing day to day support to Royal Navy operations around the world. UK ratings are also employed in the PFI funded strategic sealift vessels. Where military operations require additional sealift shipping (any cargo related to operations), this would be met by commercial shipping. Without maintaining a critical mass of trained UK ratings, it is conceivable, for example, that the Royal Navy might not be able to call upon ships staffed exclusively by UK seafarers to assist in future military operations if required (as was required in support of the Falklands operations).

It is not possible to assign monetary values to such benefits. The value for money of SMarT 3 and 5 therefore rests on a political judgement of whether the government wishes to continue to invest in the training of seafarer ratings to maintain a merchant naval capability which can be operated without reliance on non-UK seafarers.

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