HM Prison & Probation Service

European Union
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Value for Money Assessment

HMPPS Co-Financing Organisation CFO3 Programme 2015-2023

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Introduction

Report Overview

This report assesses the economic evidence base for Her Majesty's Prison and Probation Service's Co-Financing Organisation's CFO3 programme. The report's aim is to provide clear and straightforward information regarding the value for money of the CFO3 programme, to provide assurances and promote sound decision-making in the commissioning of future programmes.

Part 1 assesses the CFO3 programme's impact on reducing reoffending, a key objective of Her Majesty's Prison and Probation Service. An estimate is placed on the economic and wider social benefit of the CFO3 programme in the context of crime reduction.

A key targeted output of the CFO3 programme is the movement of programme participants from unemployment to employment. Part 2 presents a measure for the economic and wider social benefit arising from the CFO3 programme moving participants into sustained employment.

In part 3 of this report a measure is estimated to provide an overall view of the economic case for the CFO3 programme by combining findings from parts 1 and 2. The limitations and uncertainty of the estimates are discussed.

What is the Co-financing Organisation?

HMPPS Co-Financing Organisation (CFO) accesses European Social Fund (ESF) monies to deliver the CFO3 programme as part of the Social Inclusion Thematic Objective for the 2014-2020 ESF programme[1]. Policy led and output driven, the CFO3 programme delivers services to offenders in custody and community to move them closer to the labour market.

The CFO3 programme targets those offenders furthest away from, and who have difficulty accessing, the mainstream services currently available. By tackling a range of identified barriers, CFO3 programme providers prepare offenders for mainstream provision. CFO3 programme participants are either unemployed or economically inactive as well as being generally unskilled, unqualified, and de-motivated. Drug and alcohol abuse, behavioural issues, problems with debt and housing alongside relationship issues and poor physical and mental health are common place.

[1] Department for Work & Pensions (DWP), European Social Fund England Operational Programme 2014-2020, 2015

Operational delivery is devolved via nine regional contracts across England (excluding Cornwall), split across four prime providers. CFO3 programme delivery is aimed at complementing existing provision, particularly the education provision within prisons as well as other existing employment and skills services. The key targeted outputs for the CFO3 programme comprise of moving participants into employment and/or further learning. The CFO3 programme commenced in July 2015 and will run to August 2023.

More information about HMPPS Co-Financing Organisation and the CFO3 programme can be found at www.co-financing.org or by contacting the CFO Service Desk at CFO-servicedesk@justice.gov.uk / 01925 423 444.

Assessing Value for Money

Value for money is a key component when measuring the impact of programme delivered interventions and forms the economic case for future provision. Value for money is a form of economic appraisal that focuses on quantifying the public value from the perspective of society and should consider all social, economic, and environmental costs and all effects on public welfare[2]. If a programme is achieving value for money then it can be described as using public resources to create public value.

To estimate value for money we must bring together a variety of costs and benefits expected to be realised through programme intervention. There is inherent uncertainty in estimating such costs and benefits, particularly those impacts that apply to wider society or whose intrinsic value is not readily quantifiable. This report endeavours to make plain such uncertainties so that commissioners and policy makers have a firmer footing from which to make decisions and appraisals. In line with guidance set out by HM Treasury's Azure Book, which sets standards for analytical assurance and communicating analytical uncertainty, this report seeks to use analytically assured sources wherever possible[3].

Wherever possible this report will endeavour to follow the Office of National Statistics (ONS) Code of Practice for Statistics[4] by:

- Ensuring the integrity, inpartiality and professional capability of the authors.
- Ensuring the most appropriate data sources are used and that any limitations are explained. This includes using independently assured data sources where possible.

[2] HM Treasury, Guide to Developing the Programme Business Case, 2018

[3] HM Treasury, The Aqua Book: guidance on producing quality analysis for government, 2015

[4] Office of National Statistics (ONS), Code of Practice for Statistics, 2018

- Being transparent about the risks and uncertainty of the statistics used and provide clear information on the possible impact of these limitations.
- Ensure that the statistics and analysis used are useful and relevant in the understanding of the value for money of the CFO3 programme.

This report has been created in adherence to HM Treasury Green Book principles which provides guidance on the treatment of costs and benefits[5]. Opportunity costs are considered, optimism bias in the face of uncertainty is accounted for and where appropriate, recommended discount rates are applied. Throughout this report the rationale for the treatment of costs and benefits will be explained. Where possible, costs and benefits will be broken down between government agencies, the Exchequer and wider society.

[5] HM Treasury, The Green Book: central government guidance on appraisal and evaluation, 2018

Executive Summary of Key Findings

Social & Economic Benefit from Reducing Proven Reoffending

A Ministry of Justice Data Lab (JDL) study of CFO3 programme participants who left the programme between July 2015 and Dec 2016 evidenced that on average the CFO3 programme prevents 0.35 proven reoffences per participant. It is estimated that the average unit cost to society of a proven reoffence is £8,700 (2018/19 prices). Presently this equates to a benefit-cost ratio of **£2.20 saved for every £1.00 spent**, purely in terms of reducing reoffending. This value does not account for any additional benefit the CFO3 programme may create through its activity. The various limitations and uncertainties of these findings are covered in detail in part 1 of this report.

Social & Economic Benefit from Moving Participants into Employment

By cross-referencing CFO3 programme participants with data provided by Her Majesty's Revenue & Customs (HMRC) for 2017/18, it is shown that 23.4% of participants entered P45 employment within 12 months of commencing intervention and retained this employment for an average of 18 months. It is estimated that 5.5% of participants gained P45 employment as a direct consequence of CFO3 programme activity and would not have obtained employment in the programme's absence. The estimated net benefit to society of moving a participant into employment is £41,100 in 2018/19 prices. Presently this equates to a benefit-cost ratio of **£1.64 saved for every £1.00 spent**, purely in terms of moving participants into employment. This value does not account for any reductions in crime that may have occurred as a result of CFO3 intervention. The various limitations and uncertainties of these findings are covered in detail in part 2 of this report.

Overall Value for Money of the CFO3 programme

By combining the effects of moving participants into employment and reducing reoffending, an overall benefit-cost ratio of **£3.84 saved for every £1.00 spent** is derived. It should be appreciated that this value is a speculation based on a 'best guess' scenario. For more information on how this estimate was derived at and for estimates under other conditions, please see part 3 of this report.

Part 1

Reducing Reoffending of Programme Participants

Why Reduce Reoffending?

A Home Office report on the economic and social costs of crime was published in 2018[6]. The Home Office report estimated that the cost of crimes to individuals in England & Wales in 2015/16 was approximately £53bn[7], with an additional £10bn[7] for crimes against businesses. Following this a 2019 report from the Ministry of Justice estimated the social and economic cost of reoffending of a cohort of offenders from 2016 to have been £18.4bn[7] in the 12-month follow-up period[8].

The most recently published statistics on proven reoffending by the Ministry of Justice[9] show that over the last ten years, between 2006/07 and 2016/17, the number of offenders, reoffenders and reoffences have steadily fallen. This correlates with a fall in recorded crime rates over the same period by the police[10,11]. Over this period the number of proven reoffenders had fallen by 48% and the number of proven reoffences by 35%[9]. For context, attempts to measure all crime, not just crime that is reported to the police, by the Crime Survey for England & Wales indicates that levels of crime have remained steady[12]. Although overall levels of crime are unchanged, recent trends show a mixed and complex picture with, for example, various forms of theft and fraud showing increases whereas robbery and computer misuse has fallen.

The fall in the absolute number of proven reoffenders and reoffences masks that over the same ten-year period the rate of proven reoffending, that is, the proportion of offenders going on to reoffend within 12 months of leaving custody or starting a court order, has remained stubbornly high at between 29% and 32%[9]. Additionally, the average number of previous offences of offenders interacting with the Criminal Justice System (CJS) and the number of reoffences committed by reoffenders is increasing[9]. Ultimately the CJS is

[6] Home Office (HO) The economic and social costs of crime, second edition, 2018

[7] Figures provided in 2018/19 prices, uplifted from published figures using a GDP deflator

[8] Ministry of Justice (MoJ) Economic and social costs of reoffending, 2019

[9] Ministry of Justice (MoJ) Proven reoffending statistics: July to September 2017

[10] Home Office (HO) Historical crime data

[11] Home Office (HO) Police recorded crime and outcomes open data tables

[12] Office for National Statistics (ONS) Crime in England & Wales: year ending March 2019

having to deal with a shrinking but increasingly complex and recidivistic cohort of offenders.

It is understandable then why reducing reoffending is one of the key priorities of HMPPS, a vision shared by other government agencies and departments interacting with offenders and the CJS. Current policy drives an approach that is rehabilitative as well as punitive in tackling the burden that reoffending poses society. Some resettlement programmes, such as the Co-Financing Organisation's CFO3 programme, provide interventions that lead to short and medium-term outputs such as the acquisition of skills and qualifications or sustained employment. The reduction of reoffending is not crucial to programme success but rather a desirable externality of programme activity. Such activity can have far reaching consequences; participants can be expected to become more socially integrated and have a higher quality of life while reductions in crime and deprivation benefit local communities and relieve pressure from national and local government. Reducing reoffending can be of both economic and social value.

Does the CFO3 Programme Reduce Reoffending?

The Justice Data Lab (JDL) is an analytical team within the Ministry of Justice (MoJ). JDL gather evidence for the MoJ to ascertain what works to reduce reoffending by providing group-level reoffending analysis to organisations that work with offenders and would like to understand the impact of their interventions[13]. The CFO3 programme sent JDL a list of all enrolled participants who had left the programme from July 2015 through to December 2016 for analysis. The results of this analysis were published in July 2019[14].

To ascertain an organisation's impact on reducing reoffending, JDL create a matched control group for comparison with those offenders receiving programme intervention. The control group is matched using a combination of demographic factors such as age and gender, current and historical offending along with established needs such as unemployment and drug-use[15]. In the context of the CFO3 programme, the matched control group represents a business-as-usual (BAU) group; the aggregate levels of reoffending experienced by the matched control group are inferred to be those that would have occurred to CFO3 programme participants should they not have received intervention.

A key limitation of the JDL methodology is that to construct an appropriate BAU group only a subset of the CFO3 programme participants are used. Reasons for not being included in the final comparison include[15]:

[13] Ministry of Justice (MoJ) Justice data lab: user guidance, 2018

[14] Ministry of Justice (MoJ) Justice data lab analysis: reoffending behaviour after support from HMPPS CFO, 2019

[15] Ministry of Justice (MoJ) Justice data lab: methodology paper, 2013

- JDL analysis looks to measure proven reoffending within 12 months of leaving custody or commencing a court order. Participants who were still held in custody at the time of leaving the programme or whose intervention ceased outside the scope of JDL's reoffending database cannot be used.

- Participants who had been convicted of a sex offence at any point prior to commencing on the programme were excluded from the analysis due to the reoffending behaviour of sex offenders being generally rather different from non-sex offenders.

- Additionally a small number of participants were excluded from the analysis due to data linkage problems, data cleansing or the matching method used.

Ultimately the final subset of CFO3 programme participants used in the JDL analysis was 1,282 (53%) offenders from an initial set of 2,424 programme participants[14]. Due to the nature in which it has been created, this final subset of participants is not representative of the the wider CFO3 programme. The results of the JDL analysis only tell us of the impact the CFO3 programme had on the subset of participants used in the analysis and not of the impact of intervention on participants with previous sex offences or whom were still held in custody at the time of leaving the programme. Any inferences on the impact on reoffending the CFO3 programme had on these individuals would be purely speculative.

The headline results of the JDL analysis into CFO3 programme participants who received intervention between 2015 and 2016 are as follows[14]:

- 35% of CFO3 programme participants reoffended within a 12 month period compared to 41% of offenders in the BAU group. A reduction of 6 reoffenders for every 100 offenders receiving intervention, this is a statistically significant result.

- On average CFO3 programme participants committed 1.37 reoffences each within the 12 month follow-up period compared to 1.72 reoffences each for the BAU group. A reduction of 35 reoffences for every 100 offenders receiving intervention, this is a statistically significant result.

- For those participants included in the analysis, the CFO3 programme both reduced the likelihood of reoffending and reduced the number of reoffences committed by those who did go on to reoffend.

- It is unclear whether CFO3 programme intervention had an impact on the average length of time before a reoffence was committed.

Estimating the Cost of Reoffences

The broad approach of this report in assessing the value for money of the CFO3 programme in the context of reducing reoffending is to estimate the net saving arising from the reoffences prevented by CFO3 programme intervention. The cost of the CFO3 programme is offset by the anticipated economic and social costs prevented through a reduction in reoffending. It should be noted that this section of the report does not provide an overall estimate of the value for money of the CFO3 programme, but rather assesses the economic and social value the programme creates through reducing reoffending. The overall value for money of the CFO3 programme is discussed in part 3 of this report.

The economic and social costs of reoffending were estimated by the Ministry of Justice in a report in 2019[8]. The MoJ report followed a very similar methodology presented in a 2018 Home Office report used to estimate the economic and social costs of crime in general[6]. Both the MoJ and HO reports separate the costs of crime and offending into three main areas:

- Costs in anticipation of crime, for example the cost of fitting a car immobiliser.
- Costs in consequence of crime, for example the cost of replacing a stolen car.
- Costs in response to crime, for example the costs to the police and criminal justice system.

The MoJ report takes the findings from the HO report and attempts to estimate the proportion of the wider costs of crime that can be attributed to reoffending. Unit costs of crime and reoffending are provided by the HO and MoJ reports respectively. Such unit costs are achieved by first estimating the total economic and social cost of crime/reoffending and dividing this by the estimated total number of crimes/reoffences both recorded and unrecorded. Such unit costs cannot however be applied directly to the reoffences prevented by the CFO3 programme as the JDL report only provides information on proven reoffences and does not provide information on crime that does not lead to a conviction or is not reported to the police.

The methodology presented here is to estimate the unit cost of a typical proven offence to the police and CJS so that it is applicable to the JDL report. This unit cost does not take account of the costs in anticipation of, or in consequence of, the offence. These additional costs for proven offences are inferred to be the same as the unit costs of crime in general and are estimated using the MoJ report and added to the estimate for police and CJS unit costs to give a final unit cost. A key assumption made here is that the unit cost of a typical reoffence is the same as the unit cost of a proven offence in general. It is expected that generally reoffences are of a more severe nature and have harsher sentencing imposed than first-time offences. As such, the unit costs presented here are likely to be under-estimates.

A limitation of this methodology is that it does not account for any cost savings arising from any reduction in crime outside that which leads to a proven reoffence. At present we

have no evidence of the impact the CFO3 programme may have on wider crime, only the programme's impact on reducing proven reoffending. If CFO3 intervention reduces wider crime, not just proven reoffending, then the overall economic and social cost savings in relation to crime will be higher. This scenario is not considered here.

Estimating the costs in response to reoffending

In 2011 the National Audit Office (NAO) published a technical paper on the cost of young offenders to the CJS[16]. Although primarily interested in young offenders, this paper provides unit costs for adult proven offending as the authors track young persons into the adult estate over a number of years. Unit costs are presented in figure 1.1, presented in 2018/19 prices using a GDP deflator[7]. Since these figures were first published there has been significant change in both public spending and proven offending. There is a fair degree of uncertainty in what these unit costs would have been in the 2016/17 period of reoffending for which the JDL report covers. The impact of this uncertainty is explored further in the sensitivity analysis section in part 1 of this report.

Figure 1.1 - Unit cost of adult proven offending, split by cost type*	
Unit cost of police, per recorded crime	£580
Unit costs of courts, per event	
Violence against the person	£14,998
Sexual	£12,841
Robbery	£11,120
Theft	£4,732
Criminal damage and Arson	£525
Drug	£2,949
Possession of weapons^	£2,491
Public order^	£2,491
Misc. crimes against society^	£2,491
Fraud	£3,661
Summary non-motoring	£767
Summary motoring	£406
Unit cost of offender management teams, per offender, per year	£421
Unit cost of custody, per month served in prison	£2,792

*** NAO, 2011. Uplifted to 2018/19 prices using a GDP deflator[7]**

^ Offence types not present in NAO report. Unit cost for 'Other indictable offences' has been used as a proxy.

The Ministry of Justice publishes regular statistics detailing the volume of proven offences and their respective outcomes in its Criminal Justice System statistics quarterly release (CJS-SQ). Proven offences are broken down by offence type and information is provided on the proportion of proven offences that lead to a court order or custodial

[16] National Audit Office (NAO) The cost of a cohort of young offenders to the criminal justice system, 2011

sentence. Additionally, the average sentence length of custodial convictions is provided. The statistic excludes life and indeterminate sentenced prisoners and is therefore an under-estimate. MoJ's CJS-SQ data covering the period Jan 2017 to Dec 2017[17] was applied to the NAO unit costs data to estimate the average unit cost per proven offence for each offence type – see figure 1.3. A worked example is provided in figure 1.2 and a full break-down of calculations provided in the appendix.

Figure 1.2 - Average unit cost of proven theft offence in response to crime*

Average unit cost of a proven theft offence in response to crime consists of:

- Unit cost of police = **£580**[16].
- Unit cost of courts = **£4,732**[16].
- Unit cost of Offender Management teams:
  - Cost of community orders and suspended sentence orders:
    - [Proportion receiving a court order] X
    - [Average time spent under supervision, in days] X
    - [Unit cost of offender management teams per day] =
    - [28.6%][17] X [298 days][18] X [£1.15 per day][16] = £98.42
  - Cost of custodial supervision:
    - [Proportion receiving a custodial sentence] X
    - [Average time spent under supervision, in days] X
    - [Unit cost of offender management teams per day] =
    - [24.7%][17] X [423 days][18] X [£1.15 per day][16] = £120.33
  - Unit cost of Offender Management teams = £98.42 + £120.33 = **£219**.
- Unit cost of imprisonment:
  - [Proportion receiving a custodial sentence] X
  - [Average time spent in custody, in months] X
  - [Unit cost of imprisonment per month] =
  - [24.7%][17] X [4.7 months][19] X [£2,792 per month][16] = **£3,226**.

Average unit cost of a proven theft offence in response to crime =
£580 + £4,732 + £219 + £3,226 = £8,757
= **£8,800** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

[17] Ministry of Justice (MoJ) Criminal Justice System statistics quarterly: December 2017

[18] Average time spent under supervision was calculated per conviction type for all disposals terminated in 2017 as recorded on nDelius. Unpublished.

[19] The CJS-SQ data only provides an average sentence length and not the time spent in custody. Here we assume that half of the sentence is spent in custody as is currently automatic. This does not account for early releases on Home Detention Curfew (HDC) or any time spent in custody during the second half of the sentence, for example on recall.

There is large variation in the estimated unit costs of proven offending in response to crime, from £58,200 for sexual offences to £1,000 for summary motoring offences[20]. A key uncertainty in estimating the average cost of a reoffence prevented by the CFO3 programme, therefore, is the distribution of offence types of prevented reoffences is unknown. It is generally assumed that the distribution of prevented reoffences is distributed across offence types in the same manner as reoffences in general. For the CFO3 programme's cohort, this may lead to an under-estimate of the true unit cost as the programme specifically targets custodial offenders (70% of enrolled participants) whose reoffending is anticipated to be of a more severe and ultimately costly nature than a typical reoffence. The estimated unit costs of proven offending in response to crime are applied to the number of proven reoffences for the 12 month period April 2016 to March 2017[9] based on offence type to provide an average unit cost of proven reoffending[20]. As the JDL report explicitly removed sex offenders from its analysis an adjusted unit cost is also provided that controls for this by removing sex offences from the proven reoffending offence type distribution.

Figure 1.3 – Average unit cost of proven offending in response to crime*

Unit cost by offence type, per offence:	
Violence against the person	£27,200
Sexual	£58,200
Robbery	£57,400
Theft	£8,800
Criminal damage and Arson	£10,900
Drug	£8,100
Possession of weapons	£9,000
Public order	£5,800
Misc. crimes against society	£7,900
Fraud	£9,000
Summary non-motoring	£1,500
Summary motoring	£1,000
Average unit cost of adult proven reoffending, per reoffence	£7,400
Average unit cost of adult proven reoffending excluding sex offences, per reoffence	£7,300

*** Presented in 2018/19 prices, rounded to the nearest £100. See appendix for full calculations.**

[20] See Figure 1.3.

Estimating the costs in anticipation of, and in consequence of, reoffending

The economic and social costs of reoffending were estimated by the Ministry of Justice in a 2019 report[8] which followed a very similar methodology to one presented in a 2018 Home Office report used to estimate the economic and social costs of crime in general[6]. Both the MoJ and HO reports separate the costs of crime and offending into three main areas: costs in anticipation of crime, costs in consequence of crime, and costs in response to crime. Within their 2019 report the MoJ provide estimates for the unit cost of these three cost types per offence category – see figure 1.4.

Costs in the anticipation of crime are based on activities taken by individuals or businesses to reduce the risk or burden of becoming a victim. Examples include spending on detection equipment such as burglar alarms and CCTV, costs incurred from defensive measures such as personal protection devices, and insurance administration. Costs in consequence of crime are those direct costs to individuals and services incurred because a crime has taken place. Examples include physical and emotional cost, the value of property stolen or damaged, and the cost of victim services.

As with the estimated unit costs in response to proven reoffending, the estimated unit costs in anticipation of, and in consequence of, crime are applied to the number of proven reoffences for the 12-month period April 2016 to March 2017[9] based on offence type to provide an average unit cost of proven reoffending[20]. An estimate excluding sex offences is also calculated. The same assumptions apply.

There is a fair amount of uncertainty with the estimated unit costs in the anticipation of, and in consequence of, reoffending. Although published in 2019 the estimates are based on data from 2015/16. It is unclear how these unit costs may have changed, in real terms since then, and thus we assume them unchanged. Costings are not available for all offence types and thus assumed to be £0, and it would be fair to say that there are likely further costs of reoffending that are not considered by the report.

Figure 1.4 – Estimated unit cost in the anticipation of, and consequence of, crime*

	Anticipation of crime	Consequence of crime
Unit cost by offence type, per reoffence:		
Violence against the person	£300	£8,400
Sexual	£200	£8,100
Robbery	£400	£6,700
Theft	£900	£2,000
Criminal damage and Arson	£100	£900
Drug	-	£300
Possession of weapons	-	-
Public order	£100	£500
Miscellaneous crimes against society	£700	-

Fraud Summary non-motoring Summary motoring	£200 - -	£900 - -
Average unit cost of adult proven reoffending, per reoffence	£400	£1,300
Average unit cost of adult proven reoffending excluding sex offences, per reoffence	£400	£1,300

*** Sourced from MoJ (2019) Economic and social costs of reoffending[8]. Uplifted to 2018/19 prices using a GDP deflator[7], rounded to the nearest £100.**

Combined economic and social cost of a reoffence

By combining the estimated unit costs for the anticipation, consequence and response to proven reoffending we arrive at a final estimate for the combined economic and social cost of a reoffence – see figure 1.5. Overall the average unit cost of adult proven reoffending, excluding sex offences, is estimated at £9,000 per reoffence for the follow-up period covered by the JDL analysis.

Figure 1.5 – Average unit cost of proven reoffending

Unit cost by offence type, per offence:	
Violence against the person	£35,900
Sexual	£66,500
Robbery	£64,500
Theft	£11,700
Criminal damage and Arson	£11,900
Drug	£8,400
Possession of weapons	£9,000
Public order	£6,400
Misc. crimes against society	£8,600
Fraud	£10,100
Summary non-motoring	£1,500
Summary motoring	£1000
Average unit cost of adult proven reoffending, per reoffence	£9,100
Average unit cost of adult proven reoffending excluding sex offences, per reoffence	£9,000

*** Presented in 2018/19 prices, rounded to the nearest £100.**

Cost-Benefit Analysis of a Reduction in Reoffending

Between commencement of the CFO3 programme in July 2015 and Dec 2016, the CFO3 programme had spent £23,683,768[21] on contracted-out activity. Over this period the CFO3 programme had enrolled 17,430 participants on to the programme, resulting in a unit cost of intervention of £1,359[21] per participant. It is normal at this stage to also consider the opportunity costs to the participant. Opportunity costs are those costs incurred by the individual through lost opportunities that could have been realised should they not have participated in the programme. Given that CFO3 programme participants are unemployed ex-offenders, a majority of whom will be held in custody for a large part of their time on the programme, the opportunity costs are taken to be negligible. It could be argued that a small amount of leisure time may be lost through programme participation or that maybe income from crime will be lost for some of those who were prevented from reoffending. Such factors are seen more as a barrier to participant engagement and are not considered further here.

For the subset of CFO3 programme participants analysed by JDL whom left the programme between July 2015 and Dec 2016, CFO3 programme intervention prevented 0.35 reoffences per participant[14]. Given confidence intervals the number of reoffences prevented could range between 0.19 and 0.50 reoffences per participant. The estimated unit cost of a reoffence during this period is £9,000[22]. As the benefits of preventing a reoffence are realised in the 12-month period following CFO3 programme intervention, a discount rate of 3.5% is applied as suggested by HM Treasury's Green Book[5], reducing the value to £8,700. The principal of discounting is to account for money saved in the future being of relatively less value than money saved in the present. The further into the future that the benefits of intervention are realised, the more these benefits would be discounted. Ultimately, this gives an average cost saving of £3,000 per participant[21], given to the nearest £100. This translates to a benefit-cost ratio of £2.21 saved for every £1.00 spent.

Allowing for the confidence intervals in the JDL estimate, the average cost saving per participant may range between £1,700 and £4,400. This translates to a benefit-cost ratio that may range between £1.25 and £3.24 for every £1.00 spent[21].

As well as the uncertainty expressed in the number of reoffences prevented, there is a degree of uncertainty in the estimated unit cost of a reoffence. The impact of these uncertainties is explored in the sensitivity analysis section of part 1 of this report.

[21] 2018/19 prices.

[22] See figure 1.5. Average unit cost of a reoffence in 2017 for an adult. Price has been adjusted to account for the lack of sex offenders in the JDL sample. Given in 2018/19 prices.

Figure 1.6 – Cost saving of CFO3 programme through reducing reoffending*

Between July 2015 and August 2016, for participants in the JDL analysis:

Unit cost of CFO3 intervention, per participant = **£1,359**
Discounted unit cost of a proven reoffence = **£8,700**
Average proven reoffences prevented, per participant = **0.35**
Average cost of reoffending prevented, per participant = **£3,000**

This equates to £2.21 saved for every £1.00 spent.

*** Presented in 2018/19 prices.**

The estimated economic and social value that the CFO3 programme provides is £2.21 for every £1.00 spent on programme intervention[21]. This estimate only applies to those participants analysed by the JDL whom left the programme between Jul 2015 and Dec 2016. Applying this value to programme participants who had previously committed sex offences, who were held in custody at the point of leaving the programme or whom left the programme after Dec 2016 would be speculation. The economic and social benefit of the CFO3 programme in its entirety is explored further in part 3 of this report.

Sensitivity Analysis

Several uncertainties have been alluded to while estimating the economic and social benefit the CFO3 programme creates through reducing reoffending. This report endeavours to make plain the possible impact of such uncertainties such that commissioners and policy makers have a firmer footing from which to make decisions and appraisals. The presented benefit-cost ratio of £2.21 saved for every £1.00 spent is the 'best guess' at the CFO3 programme's economic and social impact. However, this must be considered in the context of the aforementioned uncertainties.

Following from figure 1.6 the benefit-cost ratio can be broken-down into three components:

- Unit cost of CFO3 programme intervention, per participant.
- Unit cost of a reoffence prevented by the CFO3 programme.
- Average number of reoffences prevented by the CFO3 programme, per participant.

The unit cost of CFO3 programme intervention is an evidenced actual with no uncertainty. The JDL analysis provided confidence intervals surrounding the estimate for the average number of reoffences prevented by CFO3 intervention. The unit cost of a reoffence poses a greater degree of uncertainty. To improve our understanding of the impact of the uncertainties involved, the benefit-cost ratio is calculated for a range of possible values for the unit cost of a reoffence and the average number of reoffences

prevented per participant, presented as an uncertainty matrix - see figure 1.7. Annotated on the uncertainty matrix is a number of scenarios that enable us to better understand the context of our 'best guess' benefit-cost ratio.

Figure 1.7 – Uncertainty matrix*

Discounted unit cost per reoffence of JDL analysed participants, excluding sex offenders	Average Reoffences Prevented Per Participant						
	0.19	0.25	0.30	0.35	0.40	0.45	0.50
£5,200	£0.74	£0.96	£1.18	£1.32	£1.55	£1.69	£1.91
£6,100	£0.88	£1.10	£1.32	£1.55	£1.77	£1.99	£2.28
£7,000	£0.96	£1.32	£1.55	£1.84	£2.06	£2.35	£2.58
£7,800	£1.10	£1.47	£1.69	£1.99	£2.28	£2.58	£2.87
£8,700	£1.25	£1.62	£1.91	**£2.21**	£2.58	£2.87	£3.24
£9,600	£1.32	£1.77	£2.13	£2.50	£2.80	£3.16	£3.53
£10,400	£1.47	£1.91	£2.28	£2.65	£3.09	£3.46	£3.83
£11,300	£1.55	£2.06	£2.50	£2.94	£3.31	£3.75	£4.19
£12,200	£1.69	£2.28	£2.72	£3.16	£3.61	£4.05	£4.49

F, D, B, A, C, E, G

*** Presented in 2018/19 prices.**

Scenario A: This scenario represents our 'best guess' of the benefit-cost ratio of the CFO3 programme's impact on reducing reoffending. It uses the JDL's best estimate for the average reoffences prevented per participant and the unit cost of a reoffence as detailed in this report using the most recent published research and statistics available. As not all costs of reoffending have likely been realised in the latter value, nor has the impact on unproven and unrecorded crime been accounted for, this could be considered a conservative estimate.

Scenario B: This scenario is the same as scenario A, but with the average number of reoffences prevented per participant reduced to 0.19, the lower bound of the JDL estimate. The effect of this reduction is to reduce the benefit-cost ratio from £2.21 saved per £1.00 spent to £1.25 saved per £1.00 spent. This can be considered a worst-case scenario for the JDL estimate. There is still a perceived net economic and social benefit of the CFO3 programme through the reduction of reoffending but the impact has become much more marginal.

Scenario C: This scenario is the same as scenario A but with the average number of reoffences prevented per participant increased to 0.50, the upper bound of the JDL estimate. The effect of this increase is to inflate the benefit-cost ratio from £2.21 saved per £1.00 spent to £3.24 saved per £1.00 spent. This can be considered a best-case scenario for the JDL estimate. The net economic and social benefit of the CFO3 programme through the reduction of reoffending is larger due to a greater reduction in reoffending

Scenario D: This scenario is the same as scenario A but with the unit cost of a reoffence reduced by 40%, to £5,200. A reduction of 40% is a somewhat arbitrary extreme used for illustrative purposes. The effect of this reduction is to reduce the benefit-cost ratio from £2.21 saved per £1.00 spent to £1.32 saved per £1.00 spent. There is still a perceived net economic and social benefit of the CFO3 programme through the reduction of reoffending but the impact has become much more marginal.

Scenario E: This scenario is the same as scenario A but with the unit cost of a reoffence increased by 40% to £12,200. An increase of 40% is a somewhat arbitrary extreme used for illustrative purposes. The effect of this increase is to improve the benefit-cost ratio from £2.21 saved per £1.00 spent to £3.16 saved per £1.00 spent. The net economic and social benefit of the CFO3 programme through the reduction of reoffending is larger due to the greater perceived cost of a typical reoffence.

Scenario F: This scenario takes a 40% reduction in the estimated cost of a reoffence and applies it to the lower bound of the JDL estimate for the number of proven reoffences prevented per participant. The effect of this is to reduce the benefit-cost ratio down to £0.74 per £1.00 spent. In other words, the CFO3 programme would cost more to run than the perceived economic and social value it creates through reducing reoffending. Although a net loss in economic and social value seems unlikely, solely in the context of reduced reoffending, it should be noted that it is possible within the bounds of the JDL estimate if the cost of a reoffence falls to £7,000 (80% of the £8,700 ‘best guess’).

Scenario G: This scenario takes a 40% increase in the estimated cost of a reoffence and applies it to the upper-bound of the JDL estimate for the number of proven reoffences prevented per participant. The effect of this is to raise the benefit-cost ratio to £4.49 saved per £1.00 spent. This would be an optimistic outcome.

Part 2

Moving Programme Participants from Unemployment to Employment

Why Move Participants from Unemployment to Employment?

Moving individuals from unemployment or economic inactivity into sustained employment provides many perceived benefits to both the individual and society in general. It has been suggested that; for those out of work whom are able to work, there are economic, social and moral arguments to moving them into employment and this movement is the most effective way to improve their well-being and the well-being of their families and communities[23].

Likely the most obvious benefit to the individual is an increase in income, leading to a better standard of living, greater economic freedom and a reduction in financial vulnerability. Costs incurred by the individual through being in work, such as travel costs, childcare and lost leisure time, should also be considered. In a wider economic context, there will be multiplier effects on the local economy through increased consumer spending and increased economic output through the employment itself[24].

Outside of the direct economic benefits of moving an individual into employment, there are additional indirect benefits that should be accounted for. There is an increasing amount of evidence showing how moving someone into employment benefits their mental health[23]. Reductions in common mental health disorders (CMDs), such as depression and anxiety, have been shown to reduce costs to the NHS, local government and other stakeholders while improving the well-being of the individual[25]. There is currently limited evidence on the impact moving into employment has on physical health conditions[25].

A firm relationship has been established between income and acquisitive crime[24], and as income is clearly linked to employment status it stands that acquisitive crime is linked to unemployment, if only indirectly. It is currently unclear if, in a general sense, moving individuals into employment reduces the likelihood of them committing crime. As the CFO3 programme is explicitly targeted at ex-offenders, understanding the relationship

[23] Department for Work & Pensions (DWP) Is work good for your health and well-being?, 2006

[24] Department for Work & Pensions (DWP) Social Cost-Benefit Analysis framework, 2010

[25] Public Health England (PHE) Estimation of benefits from moving individuals into employment, 2017

between employment and offending is desirable. CFO3 programme interventions are aimed at removing participant's barriers to employment, improving their employability and moving them closer to the labour market. As outlined in part 1 of this report, there is evidence that the CFO3 programme reduces reoffending of participants through programme intervention[14]. A corollary of this is that moving individuals into employment reduces future offending, at least for individuals with a history of offending behaviour.

The potential social and economic impact of moving individuals from unemployment or economic inactivity into employment could be far reaching. There could be a number of latent costs and benefits associated with employment that will not be accounted for in this analysis due to a lack of understanding or the lack of an evidence base. For example, it may be the case that moving into employment reduces the likelihood of family breakdown with indirect benefits on families and communities.

Does the CFO3 Programme Move Participants into Employment?

As part of HMPPS CFO's Memorandum of Understanding with the Managing Authority of the 2014-2020 ESF programme, the CFO3 programme has a targeted number of employment outputs to be evidenced by programme completion in 2023. These targets are devolved to the CFO3 programme's four regional providers who are paid under a payment by results (PbR) model.

CFO3 programme participants will typically undergo a range of interventions aimed at addressing their specific barriers to employment and improving their employability. Participants are expected to have progressed closer to the labour market by the time they leave the programme. For those participants who cross the threshold into employment, programme providers must submit robust evidence, such as a wage slip and covering letter from an employer to attract payment.

A large component of CFO3 intervention is moving participants from economic inactivity to the point that they are job-ready and actively seeking employment. In addition to the evidenced employment mentioned above, it is anticipated that participants who do not achieve evidenced employment while on the CFO3 programme will be more likely to gain employment post-programme intervention than if they had not received the intervention in the first place. To conduct a value for money assessment of the programme in relation to moving participants into employment, the total number of participants entering employment must be estimated, not just those entering employment as evidenced by the programme. To achieve this offender-level data containing P45 employment history was obtained from Her Majesty's Revenue & Customs (HMRC) covering 2017/18. Data was provided on all offenders in England & Wales who either left custody or commenced a community sentence[26] during 2016/17. The P45 employment dataset consists of all

[26] Offenders commencing a Community Order or Suspended Sentence Order.

employment spells notified by employers to HMRC via P45 forms. A limitation of this dataset is that it omits information on any self-employment, and those whose income falls below the Lower Earnings Limit for National Insurance Contributions may not be included as employers are not required to inform HMRC of their employment.

By cross-referencing the P45 employment data with CFO3 programme participants it is possible to obtain the proven 12-month P45 employment rate for those who started to receive programme intervention in 2016/17 – see figure 2.1. Here we define the proven 12-month P45 employment rate as the proportion of initially unemployed or economically inactive offenders who were in P45 employment at some point within 12 months of release from custody or commencing a court order.

Figure 2.1 – Proven 12-Month P45 Employment Rates

CFO3 programme participants (2016/17): **23.4%**
BAU Control Group: **17.9%**

Relative increase in employment rate: **30.5%**
Absolute increase in employment rate: **5.5%**

To ascertain the programme's impact on moving participants into employment, a matched control group was created for comparison with those offenders receiving programme intervention. The control group is matched using a combination of demographic factors such as age and gender, offending behaviour and supervision requirements, geographical location along with established needs such as disabilities and levels of educational attainment. The control group is also matched on their disposal type (release from custody or community sentence), and all offenders in the control group must have been unemployed or economically inactive at the start of their supervision. Those who are economically inactive due to retirement or were outside of working age at the start of their supervision were not considered for the control group.

In the context of the CFO3 programme, the matched control group represents a business-as-usual (BAU) group; the aggregate levels of P45 employment experienced by the matched control group (see figure 2.1) are inferred to be those that would have occurred to CFO3 programme participants should they not have received intervention. These findings are broadly similar to the findings of a 2014 report by the Department of Work & Pensions (DWP) investigating the P45 employment rates of ex-offenders following an almost identical methodology[27].

[27] Department for Work & Pensions (DWP) Experimental Official Statistics: P45 employment levels for working age adult offenders in England and Wales one year after caution, conviction or release from prison, 2005/06 to 2011/12, October 2014

A limitation of our methodology is that to construct an appropriate BAU group only a subset of the CFO3 programme participants are used. Our analysis looks to measure proven P45 employment within 12 months of leaving custody or commencing a court order. Participants who enrolled on the CFO3 programme more than 90 days prior to or post this date are excluded from the analysis. Additionally, a small number of participants were excluded from the analysis due to data linkage problems, data cleansing or where outside of working age.

The headline results of the analysis into CFO3 programme participants who received intervention between 2016 and 2017 are as follows:

- CFO3 programme intervention **increased the proven 12-month P45 employment rate of participants from 17.9% to 23.4%.**

- CFO3 programme intervention **increased the probability of being in P45 employment** at some point within 12 months of intervention starting **by 30.5%.**

- **5.5% of CFO3 participants entered P45 employment** at some point within 12 months of intervention starting **who would not be expected to do so in the absence of intervention.**

There is clear evidence that CFO3 intervention results in participants moving from unemployment into employment. Evidence suggests that 5.5% of CFO3 programme participants entered ‘additional’ employment directly due to programme intervention, while the remaining 17.9% of CFO3 programme participants who entered ‘dead-weight’ employment would have done so anyway in the absence of intervention.

Ultimately, the figure of 5.5% of CFO3 programme participants entering additional employment does not take account of any additional employment obtained that is not notified to HMRC via a P45 form – namely self-employment and employment spells from very low-income individuals. It is unclear as to whether the CFO3 programme has a similar impact on such non-P45 employment. Any increase in additional employment through non-P45 employment is not considered.

Estimating the Benefit of Moving Participants from Unemployment to Employment

In 2010 the Department for Work & Pensions (DWP) published their Social Cost-Benefit Analysis (CBA) Framework[24] for employment programmes. The framework aimed to integrate the wider social impacts of employment programmes into their existing CBA framework, which focussed primarily on fiscal costs and benefits and ultimately the impact on the Exchequer. Building upon a thorough and comprehensive review of relevant literature and evidence, the social CBA framework lists key social impacts to consider, in addition to traditional fiscal impacts, when evaluating the economic and social impacts of an employment programme.

With the aim of bringing attention to the importance of considering health when making decisions around employment, in 2017 Public Health England (PHE) created a CBA tool that puts estimates on the economic and social benefit of moving an individual from unemployment or economic inactivity into employment[25]. The PHE tool draws largely from the application of DWP's social CBA framework, with a stronger emphasis on health benefits – particularly benefits to mental health, due to the available evidence base. The PHE tool provides a practical resource to decision makers, enabling fast and reliable approximations on the social and economic benefits of employment.

It is from the PHE tool that this report estimates the social and economic benefit from moving a CFO3 programme participant into employment. For brevity and clarity, a list of costs and benefits considered by the PHE tool are presented in figures 2.2, 2.3, 2.4 and 2.5. All monetary values are uplifted to 2018/19 prices using a GDP deflator[7]. Financial benefits are discounted at a rate of 3.5% as per HM Treasury's Green Book[5], while health outcomes are discounted at 1.5% on advice from Public Health England[25].

A key input to the tool is the length of time a programme participant will typically spend in employment once obtained. Following on from the analysis outlined in the previous section, the end-date of the employment spell for each offender entering employment was obtained (where the employment spell had ended). It was found that 80% of offenders were still in the same employment 6 months from starting, and 53% of offenders were still in the same employment 12 months from starting. We infer from this that the median time spent in employment, that is the point at which half are still in employment and half are not, is slightly higher at approximately 13 months. However, as all time spent in employment, once discounted, contributes to the value of employment, the arithmetic mean, rather than the median, is the appropriate measure of central tendency to be used. As such, for the remaining 47% of the cohort who were employed for at least 12 months, we propose the use of a statistical model (outlined in part 2 of the appendix) to predict the likelihood of them retaining their employment beyond the first year. From the model we derive an average mean length of time spent in employment (discounted at 3.5%) of 550 days, **18 months**. It must be appreciated that this value is speculative and should be treated with caution.

Although not directly comparable, our value of 18 months is a broadly similar retention rate to that of individuals surveyed in DWP's destinations survey from 2011[28]. However, there is generally a lack of literature regarding the employment retention of ex-offenders or employment programmes in general. At the extreme, if no one retained their employment beyond the 12-month window for which data was available, the mean time spent in employment would be 9 months. This value is the bare-minimum value of the mean that can be deduced from our data and is used in the sensitivity analysis, scenario D, of this section of the report.

[28] Department of Work & Pensions (DWP) Destinations of JSA, IS & ESA leavers, 2011

Figure 2.2 – Benefits to National and Local Government*		
	Benefits per participant moving into employment	
Increase in income tax	£1,600	Wages, income tax, national insurance, and indirectly childcare costs, are based on DWP's Destinations Survey 2011[28], a one-off survey of 9,000 customers who had left JSA, IS or ESA.
Increase in employees' NIC	£1,300	
Increase in employers' NIC	£1,500	
Increase in indirect tax	£900	Changes in benefits and indirect tax from moving into work are derived from DWP's Policy Simulation Model (PSM), 2016. Due to the timing of available benefit information, it is unclear what the impact of Universal Credit (UC) will have on the analysis.
Reduction in JSA/ESA benefit	£9,800	
Reduction in Housing Benefit payments	£3,100	
Reduction in operational costs	£1,000	Refers to costs related to claims maintenance and advisor interventions.
Increase in tax credits	-£1,500	
Reduction in Council Tax Benefit payments	£600	
Reduction in Free School Meals payments	£94	
Reduction in Local Authority health and social care	£39	Based on PHE's estimate of the prevalence of CMDs reducing from 18.9% to 8.8% of those moving into employment. These figures are based on the general working age population. It is anticipated that the initial prevalence of CMDs will be higher amongst CFO3 programme participants. It is unclear what effect this might have on the analysis.
Reduction in healthcare costs: NHS	£124	
Other reductions in healthcare costs	£7	
Net benefit to the Exchequer	**£18,600**	

*** Values are per participant moving into employment and retaining employment for 18 months. Presented in 2018/19 prices. Figures £200 or greater are rounded to the nearest £100.**

Figure 2.3 – Benefits to Programme Participants*		
	Benefits per participant moving into employment	Comments
Increases in wages	£22,400	Wages, income tax, national insurance, and childcare costs, are based on DWP's Destinations Survey 2011[28], a one-off survey of 9,000 customers who had left JSA, IS or ESA.
Increases in Tax Credits	£1,500	Changes in benefits and indirect tax from moving into work are derived from DWP's Policy Simulation Model (PSM), 2016. Due to the timing of available benefit information, it is unclear what the impact of Universal Credit (UC) will have on the analysis.
Reduction in JSA/ESA benefit	-£9,800	
Reduction in Housing Benefit payments	-£3,100	
Reduction in Council Tax Benefit payments	-£600	
Reduction in Free School Meals payments	-£90	
Increase in income tax	-£1,600	
Increase in employees' NIC	-£1,300	
Increase in indirect tax	-£900	
Increase in travel costs	-£500	Estimated from the Department for Transport (DfT) National Travel survey.
Increase in childcare costs	-£200	Responses regarding childcare costs from the 2012/13 Family Resources Survey (FRS) for participants with low family earnings are used to proxy the increased childcare costs.

Oppurtunity costs	£0	It is assumed that there are no oppurtunity costs for CFO3 programme participants.
Net benefit to participant	**£5,700**	
Welfare weighted net benefit to participant	**£10,800**	A welfare weight of 1.9 was used on net benefit to the participant as per HM Treasury's Green Book advice. Welfare weighting is appropriate due to the low income nature of the unemployed and it is assumed that those moving into employment are in the lowest income quintile. Welfare weighting accounts for the relative value of money being greater amongst low income individuals compared to the average taxpayer, by whom the programme is ultimately funded.

*** Values are per participant moving into employment and retaining employment for 18 months. Presented in 2018/19 prices. Figures £200 or greater are rounded to the nearest £100.**

Figure 2.4 – Benefits to the Local Economy*

	Benefits per participant moving into employment	Comments
From employment earnings	£13,300	A local economy multiplier of 1.60 is used.
From healthcare cost savings	£100	A local economy multiplier of 1.66 is used.
Total benefits to the local economy	**£13,500**	

*** Values are per participant moving into employment and retaining employment for 18 months. Presented in 2018/19 prices. Figures £200 or greater are rounded to the nearest £100.**

Figure 2.5 – Overall Economic and Social Benefits*		
	Benefits per participant moving into employment	Comments
Net benefit to Exchequer	£18,600	
Net benefit to participant: actual	£5,700	
Net benefit to participant: welfare weighted	£10,800	
Overall benefit to society	**£41,100**	Includes welfare weighting net income of the participant and benefits to the local economy. Excludes transfers between participant and the state.

*** Values are per participant moving into employment and retaining employment for 18 months. Presented in 2018/19 prices. Figures £200 or greater are rounded to the nearest £100.**

One area of benefit identified by DWP's social CBA framework, but not incorporated into the PHE tool, is the impact on crime reduction. For an assessment of the CFO3 programme's social and economic impact of reducing reoffending, see part 1 of this report.

The overall social and economic benefit of moving a CFO3 programme participant into employment was £41,100. Of this, £18,600 are cost savings to national and local government, and £10,800 are the net benefits to the individual – see figure 2.5. There is a fair amount of uncertainty in these final figures. A key assumption is that the presented benefit of moving into employment, which is based on the average unemployed person in England, applies to CFO3 programme participants. The sensitivity analysis section of this part of the report explores further the impact of adjustments to the estimated benefit to society of moving CFO3 programme participants into employment.

Cost-Benefit Analysis of Moving Participants into Employment

Between commencement of the CFO3 programme in July 2015 and Mar 2019, the CFO3 programme had spent £72,822,759[29] on contracted-out activity. Over this period the CFO3 programme had enrolled 54,369 participants on to the programme, resulting in a unit cost of intervention of £1,339[28] per participant. It is expected that 5.5% (2,990) of these participants will enter employment as a direct result of CFO3 programme intervention.

Given a net benefit of moving a participant into employment of £41,100, the total benefit of moving programme participants into employment is estimated at £122,900,000. This equates to an average benefit of employment of £2,300 per participant. This is equivalent to £1.69 saved for every £1.00 spent on CFO3 intervention – see figure 2.6.

Figure 2.6 – Cost saving of CFO3 programme through moving participants into evidenced employment*

Between July 2015 and March 2019:

Unit cost of CFO3 intervention, per participant = **£1,339**
Net benefit of moving into employment, per participant = **£41,100**
Proportion of participants moving into employment,
as a direct result of CFO3 programme intervention = **5.5%**
Number of participants moving into employment,
as a direct result of CFO3 programme intervention = **2,990**
Total benefit of employment = 2,990 * £41,100 = **£122,900,000**
Average benefit of employment,
per participant = £122,900,000 / 54,369 = **£2,300**

This equates to £1.69 saved for every £1.00 spent.

*** Presented in 2018/19 prices.**

Sensitivity Analysis

Several uncertainties have been alluded to while estimating the economic and social benefit the CFO3 programme creates through moving participants from unemployment or economic inactivity into employment. This report endeavours to make plain the possible impact of such uncertainties in order for commissioners and policy makers to have a firmer footing from which to make decisions and appraisals. The presented benefit-cost ratio of £1.69 saved for every £1.00 spent is the 'best guess' at the CFO3 programme's economic and social impact by moving participants into employment. However, this must be considered in the context of the aforementioned uncertainties.

[29] 2018/19 prices.

Following from figure 2.6 the benefit-cost ratio can be broken-down into three components:

- Unit cost of CFO3 programme intervention, per participant.
- Net benefit of moving a participant into employment.
- Proportion of CFO3 participants moving into employment due to CFO3 intervention.

The unit cost of CFO3 programme intervention is an evidenced actual with no uncertainty. The proportion of CFO3 participants entering employment as a direct result of programme intervention is an estimate based on a time-limited sub-set of the programme cohort and dependent on the creation of an applicable control group for comparison. Ultimately, this means that the true proportion of participants moving into employment due to CFO3 programme activity may be less than, or greater than the estimate presented.

The net benefit of a participant moving into employment, as derived using the PHE tool, also contains a fair amount of uncertainty. There is a key assumption that programme participants will achieve the same net benefit as a typical unemployed person in England moving into employment. Additionally, the PHE tool does not incorporate impacts on crime reduction.

To improve our understanding of the impact of the uncertainties involved, the benefit-cost ratio is calculated for a range of possible values for the unit benefit of entering employment and the proportion of participants entering employment due to CFO3 intervention, presented as an uncertainty matrix - see figure 2.7. Annotated on the uncertainty matrix is a number of scenarios that enable us to better understand the context of our ‘best guess’ benefit-cost ratio.

Figure 2.7 – Uncertainty matrix*

Social and economic benefit of moving a CFO3 programme participant into employment	Proportion of participants entering employment directly due to CFO3 programme intervention						
	3.3%	4.4%	5.0%	5.5%	6.0%	6.6%	7.7%
£20,600	F £0.51	£0.68	£0.77	D £0.85	£0.92	£1.02	£1.18
£25,700	£0.63	£0.84	£0.96	£1.06	£1.15	£1.27	£1.48
£30,800	£0.76	£1.01	£1.15	£1.27	£1.38	£1.52	£1.77
£36,000	£0.89	£1.18	£1.34	£1.48	£1.61	£1.77	£2.07
£41,100	B £1.01	£1.35	£1.53	A **£1.69**	£1.84	£2.03	C £2.36
£46,200	£1.14	£1.52	£1.73	£1.90	£2.07	£2.28	£2.66
£51,400	£1.27	£1.69	£1.92	£2.11	£2.30	£2.53	£2.96
£56,500	£1.39	£1.86	£2.11	£2.32	£2.53	£2.78	£3.25
£61,700	£1.52	£2.03	£2.30	E £2.53	£2.76	£3.04	G £3.55

*** Presented in 2018/19 prices.**

Scenario A: This scenario represents our 'best guess' of the benefit-cost ratio of the CFO3 programme's impact through moving participants into employment. It uses an estimate of the benefit of employment based on the general unemployed population of England and incorporates impacts on participants' mental health, welfare weighting and effects on the local economy.

Scenario B: This scenario is the same as scenario A but with the proportion of participants moving into employment due to CFO3 intervention lowered from 5.5% to 3.3%. This is an arbitrary extreme, reducing the 'best guess' value to 60% of its original value. The effect of this reduction is to reduce the benefit-cost ratio from £1.69 saved per £1.00 spent to £1.01 saved per £1.00 spent. The perceived net economic and social benefit of the CFO3 programme through moving participants into employment has become much more marginal.

Scenario C: This scenario is the same as scenario A but with the proportion of participants moving into employment due to CFO3 intervention raised from 5.5% to 7.7%. This is an arbitrary increase of the 'best guess' value of 40%. The effect of this increase is to raise the benefit-cost ratio from £1.69 saved per £1.00 spent to £2.36 saved per £1.00 spent. The net economic and social benefit of the CFO3 programme is larger due to a greater proportion of participants entering employment directly due to programme intervention.

Scenario D: This scenario is the same as scenario A but with the net benefit of a participant moving into employment reduced by 50% to £20,600. A reduction of 50% is a somewhat arbitrary extreme used for illustrative purposes. It is roughly equivalent to the average time spent in employment being reduced from 18 months to 9 months. For context, if effects on the local economy are ignored and welfare weighting omitted, the net benefit falls to £24,300. The effect of this reduction is to reduce the benefit-cost ratio from £1.69 saved per £1.00 spent to £0.85 saved per £1.00 spent. There is a net loss in economic and social value at this extreme.

Scenario E: This scenario is the same as scenario A but with the net benefit of a participant moving into employment increased by 50% to £61,700. An increase of 50% is a somewhat arbitrary extreme used for illustrative purposes. The effect of this increase is to improve the benefit-cost ratio from £1.69 saved per £1.00 spent to £2.53 saved per £1.00 spent. The net economic and social benefit of the CFO3 programme through moving participants into employment is larger due to the greater perceived benefit that moving into employment brings.

Scenario F: This scenario takes a 50% reduction in the net benefit of moving a participant into employment and applies it to a reduced proportion of participants moving into employment of just 3.3%. The effect of this is to reduce the benefit-cost ratio down to £0.51 per £1.00 spent. In other words, the CFO3 programme would cost more to run than the perceived economic and social value it creates through moving participants into employment. Although a net loss in economic and social value seems unlikely, this scenario highlights that it is possible under the right circumstances.

Scenario G: This scenario takes a 50% increase in the net benefit from moving a participant into employment and applies it to an increased proportion of participants moving into employment of 7.7%. The effect of this is to raise the benefit-cost ratio to £3.55 saved per £1.00 spent. This would be an optimistic outcome.

Part 3

Estimating Value for Money of the CFO3 Programme

Moving towards a Complete Cost-Benefit Analysis of the CFO3 Programme

As per HM Treasury Green Book principles[5], it is desirable for the Value for Money assessment to encompass the complete CFO3 programme. Every effort should be made to account for all possible social and economic impacts attributed to the CFO3 programme, and the assessment should cover the contractual lifetime of the programme.

In part 1 of this report a benefit-cost ratio was estimated for the CFO3 programme solely with regards to the programme's impact on reducing proven reoffending. In part 2 of this report a benefit-cost ratio was estimated for the CFO3 programme solely with regards to the programme's impact on moving participants into sustained employment. The net social and economic benefits used in both measures occur simultaneously through CFO3 programme activity and, as crime reduction is not accounted for in the employment measure, are exclusive of each other. Over the lifetime of the programme, the unit cost of CFO3 activity per participant will be the same for both measures. It follows that the overall benefit-cost ratio of the CFO3 programme will be a summation of the net social and economic benefits from both moving participants into employment and reducing proven reoffending divided by the cost of CFO3 provision – see figure 3.1.

Figure 3.1 – Benefit-cost ratio (BCR) of CFO3 programme

$$\text{Benefit-cost ratio} = \frac{\text{Net social \& economic benefit from reducing proven reoffending} + \text{Net social \& economic benefit from moving participants into employment}}{\text{Cost of CFO3 programme}}$$

As outlined in part 1 of this report, the net social and economic benefit of reducing proven reoffending, per participant, is a product of the average number of prevented reoffences per participant and the average cost of a reoffence. As outlined in part 2 of this report, the net unit social and economic benefit of moving participants into

employment is a product of the proportion of participants moving into employment through CFO3 intervention and the average net benefit moving into sustained employment brings. It therefore follows that the benefit-cost ratio presented in figure 3.1 can be re-written as follows – see figure 3.2.

Figure 3.2 – Benefit-cost ratio (BCR) of CFO3 programme, broken-down

$$\text{Benefit-cost ratio} = \frac{\left|\begin{array}{c}\text{[Average number of proven reoffences prevented per participant]} \\ \text{X} \\ \text{[Average cost of proven reoffence]}\end{array}\right| + \left|\begin{array}{c}\text{[Proportion of participants moving into employment]} \\ \text{X} \\ \text{[Average net benefit of moving into sustained employment]}\end{array}\right|}{\text{Unit cost of CFO3 programme, per participant}}$$

Estimating the Overall Value for Money of the CFO3 Programme

Figure 3.2 highlights that there are five key values that need to be estimated to ascertain the overall benefit-cost ratio of the CFO3 programme:

- Average number of proven reoffences prevented per participant.
- Average cost of a proven reoffence.
- Proportion of participants moving into sustained employment due to CFO3 intervention.
- Average net benefit of moving a participant into sustained employment.
- Unit cost, per participant, of the CFO3 programme.

There is a great deal of uncertainty in these five component values. This report endeavours to make plain the possible impact of such uncertainties in order for commissioners and policymakers to have a firmer footing from which to make decisions and appraisals. The key limitations and uncertainties involved in estimating each of the five component values are presented in figure 3.3.

Figure 3.3 Uncertainties and limitations	
Component Value	**Comments**
Proportion of participants moving into employment through CFO3 intervention	At present the CFO3 programme is on track to achieve it's targeted number of employment outputs, however optimism bias should be considered when assuming that the programme will maintain this through to the end of its lifespan. Estimates on the proportion of participants who enter employment as a direct consequence of CFO3 programme activity is based on participants commencing in 2016/17 and ommits self-employment.
Average net benefit of moving a participant into sustained employment	This value can be influenced by many factors: changes to public spending on welfare and health, uncertainty in the length of time participants spend in employment and their resulting income, the knock-on effects on local economies, the welfare weightings used.
Average number of proven reoffences prevented per participant	The estimated value used here is based on a cross-sectional sample that ommitted sex offenders and those still in custody at the time of leaving the programme. It is unclear whether this value will change over time or if the inclusion of ommitted participants will increase or decrease the number of reoffences prevented.
Average cost of a proven reoffence	Changes in public spending and CJS policy could influence this value. Reoffending rates are changing generally and it is unclear if the average participant exhibits the same offending behaviour as the average reoffender in general.
Unit cost, per participant, of the CFO3 programme	The total spend of the CFO programme is contracted and not subject to change. However, the unit cost is sensitive to the number of participants enrolled onto the programme during its lifespan. At present the CFO3 programme is over-achieving its targeted enrolment requirement.

It may at times be desirable for policy and decision makers to have the benefit-cost ratio of the CFO3 programme be broken down into its two component parts as alluded to in parts 1 and 2 of this report; the benefit-cost ratio of the CFO3 programme in regards to reducing reoffending, and the benefit-cost ratio of the CFO3 programme in regards to moving participants into employment excluding any impact on crime. These two values are presented in figure 3.4. It is intuitive that these two values sum to the total benefit-cost ratio of the CFO3 programme, as presented in figure 3.2.

Figure 3.4 – Benefit-cost ratio (BCR) of CFO3 programme, broken-down cont.

$$\text{Benefit-cost ratio (Reducing Reoffending)} = \frac{[\text{Average number of proven reoffences prevented per participant}] \times [\text{Average cost of proven reoffence}]}{\text{Unit cost of CFO3 programme, per participant}}$$

$$\text{Benefit-cost ratio (Moving into Employment)} = \frac{[\text{Proportion of participants moving into employment}] \times [\text{Average net benefit of moving into sustained employment}]}{\text{Unit cost of CFO3 programme, per participant}}$$

$$\text{Benefit-cost ratio} = \text{Benefit-cost ratio (Reducing reoffending)} + \text{Benefit-cost ratio (Moving into employment)}$$

As an aid to decision makers, each of the component values in the benefit-cost ratio equation (figure 3.2) have been placed into one of three scenarios: low, medium and high – see figure 3.6. The medium scenario represents the 'best guess' of the component value based on the evidence already outlined in this report. The low and high scenarios represent arbitrary extremes for the component values so decision makers may better understand the impact of broad changes to the true value relative to the medium scenario.

A 'best guess' estimate for the benefit-cost ratio of the CFO3 programme using 'medium' scenarios is derived in figure 3.5. Utilising the most recent unit cost values of the CFO3 programme, it is shown that the benefit-cost ratio in regard to reducing reoffending is £2.20 saved for every £1.00 spent[30]. The benefit-cost ratio in regard to moving participants into employment is £1.64 saved for every £1.00 spent[31]. **Overall the benefit-cost ratio of the CFO3 programme equates to £3.84 per £1.00 spent.**

Figure 3.5 – Benefit-cost ratio (BCR) of CFO3 programme, actuals

$$\text{Benefit-cost ratio (Reducing Reoffending)} = \frac{\text{0.35 proven reoffences prevented per participant} \times \text{£8,700 per proven reoffence}}{\text{£1380 per participant}}$$

Benefit-cost ratio (Reducing Reoffending) = **£2.20**[30] saved for every £1.00 spent

$$\text{Benefit-cost ratio (Moving into Employment)} = \frac{\text{5.5\% of participants moving into employment} \times \text{£41,100 per employment output}}{\text{£1380 per participant}}$$

Benefit-cost ratio (Moving into Employment) = **£1.64**[31] saved for every £1.00 spent

Benefit-cost ratio = £2.20 (Reducing reoffending) + £1.64 (Moving into employment)

Benefit-cost ratio = £3.84 saved for every £1.00 spent

[30] Please note that the BCR value differs slightly from that in part 1 due to a more up-to-date unit cost of the CFO3 programme being used here (£1380 vs £1359)

[31] Please note that the BCR value differs slightly from that in part 2 due to a more up-to-date unit cost of the CFO3 programme being used here (£1380 vs £1339)

Figure 3.6 Component value scenarios*

	Scenario Category					
	Low		Medium		High	
	Value	Comments	Value	Comments	Value	Comments
Proportion of participants moving into employment through CFO3 intervention	3.3%	Arbitrary extreme. 40% reduction in medium value.	5.5%	Estimate derived in part 2 of this report. Excludes self-employment.	7.7%	Arbitrary extreme. 40% increase to medium value.
Average Net benefit of moving a participant into sustained employment	£20,600	Arbitrary extreme. 50% reduction in medium value.	£41,100	Derived using PHE tool. Local economy effects and welfare weighting included.	£61,700	Arbitrary extreme. 50% increase to medium value.
Average number of proven reoffences prevented, per participant	0.10	Conservative value based on JDL lower estimate of 0.19.	0.35	JDL estimate for community leavers, Dec 2016. Excludes sex offenders.	0.50	JDL upper estimate given 95% confidence intervals.
Average cost of a proven reoffence	£5,200	Arbitrary extreme. 40% reduction in medium value.	£8,700	'Best guess' estimate derived in part 1 of this report.	£12,200	Arbitrary extreme. 40% increase to medium value.
Unit cost of CFO3 intervention, per participant	£690	Arbitrary extreme. 50% reduction in medium value.	£1,380	Most recent unit cost available - taken July 2019.	£2,070	Arbitrary extreme. 50% increase to medium value.

*** Presented in 2018/19 prices.**

The resulting benefit-cost ratios (BCRs) from the various combinations of component value scenarios are presented in figure 3.7. For brevity and clarity, provided below are three possible outcomes that can be derived from figure 3.7:

- A decision maker decides to use the 'best guess' or medium scenarios for each of the component values. The proportion of participants moving into employment through CFO3 intervention is assumed to be 5.5%. The average net benefit of moving a participant into sustained employment is approximated at £41,100. The average number of proven reoffences prevented per participant is assumed to be 0.35. The average cost of a proven reoffence is approximated at £8,700. A unit cost of the CFO3 programme of £1,380 per participant is used. From figure 3.7, this gives a benefit-cost ratio of the CFO3 programme of £3.84 (highlighted in the figure). For every £1.00 spent there is an estimated £3.84 saved. This is the 'best-guess' of the value for money of the CFO3 programme.

- A decision maker does not trust the presented reduction in proven reoffending and believes the true value to be significantly lower, and so opts to use the low scenario for this component value. With the medium scenario used for all other component values, this gives a benefit-cost ratio of £2.27 saved for every £1.00 spent.

- A decision maker would like to implement a new initiative that assists participants while they are in employment, offering in-work support and helping participants to sustain their employment. It is anticipated that the initiative will lead to participants being in employment for longer and the average income of a participant to be increased. Ultimately it is hoped that this will lead to an increased net social and economic benefit from the employment at the expense of an increased unit cost of the programme per participant. With a high scenario used for the latter two component values and a medium scenario used for the remaining component values, the decision maker obtains a benefit-cost ratio of £3.11 saved for each £1.00 spent.

Figure 3.7 Benefit-cost ratios (BCRs) based on different scenarios*

Percent of participants moving into employment		Low	Low	Med	Med	Med	High	High	
Benefit of moving participant into emp.		Low	Med	Low	Med	High	Med	High	Unit cost of CFO3 particpant
Reoffences prevented per part.	Avg. cost of proven reoffence								
Low	Low	£0.58	£0.91	£0.80	£1.34	£1.89	£1.78	£2.55	High
		£0.87	£1.36	£1.20	£2.01	£2.84	£2.67	£3.82	Medium
		£1.74	£2.72	£2.40	£4.03	£5.67	£5.34	£7.64	Low
Low	Medium	£0.75	£1.08	£0.97	£1.51	£2.06	£1.95	£2.72	High
		£1.12	£1.61	£1.45	£2.27	£3.09	£2.92	£4.07	Medium
		£2.25	£3.23	£2.90	£4.54	£6.18	£5.85	£8.15	Low
Medium	Low	£1.21	£1.53	£1.43	£1.97	£2.52	£2.41	£3.17	High
		£1.81	£2.30	£2.14	£2.96	£3.78	£3.61	£4.76	Medium
		£3.62	£4.60	£4.28	£5.91	£7.56	£7.22	£9.52	Low
Medium	Medium	£1.80	£2.13	£2.02	£2.56	£3.11	£3.00	£3.77	High
		£2.70	£3.19	£3.03	£3.84	£4.67	£4.50	£5.65	Medium
		£5.40	£6.38	£6.06	£7.69	£9.33	£9.00	£11.30	Low
Medium	High	£2.39	£2.72	£2.61	£3.15	£3.70	£3.59	£4.36	High
		£3.59	£4.08	£3.92	£4.73	£5.55	£5.39	£6.54	Medium
		£7.17	£8.15	£7.83	£9.46	£11.11	£10.77	£13.07	Low
High	Medium	£2.43	£2.76	£2.65	£3.19	£3.74	£3.63	£4.40	High
		£3.64	£4.14	£3.97	£4.79	£5.61	£5.45	£6.59	Medium
		£7.29	£8.27	£7.95	£9.58	£11.22	£10.89	£13.19	Low
High	High	£3.28	£3.60	£3.49	£4.04	£4.59	£4.48	£5.24	High
		£4.91	£5.40	£5.24	£6.06	£6.88	£6.71	£7.86	Medium
		£9.83	£10.81	£10.48	£12.12	£13.76	£13.43	£15.73	Low

*** Presented in 2018/19 prices.**

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Appendix

Part 1 Calculations

Figure A.1* – Unit cost of a proven offence in response to crime, by type: *Violence against the person*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £14,998[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[35.4%][17] X [298 days] [18] X [£1.15 per day] [16] = £121.83

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[34.3%][17] X [423 days] [18] X [£1.15 per day] [16] = £167.44

Unit cost of Offender Management teams = £121.83 + £167.44 = £289.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[34.3%][17] X [11.8 months] [19] X [£2,792 per month] [16] = £11,331.

Average unit cost of a proven offence in response to crime =
£580 + £14,998 + £289 + £11,331 = £27,199
= **£27,200** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.2* – Unit cost of a proven offence in response to crime, by type: *Sexual Offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £12,841[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[30.8%][17] X [298 days] [18] X [£1.15 per day] [16] = £105.72

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[53.1%][17] X [423 days] [18] X [£1.15 per day] [16] = £259.20

Unit cost of Offender Management teams = £105.72 + £259.20 = £365.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[53.1%][17] X [29.9 months] [19] X [£2,792 per month] [16] = £44,376.

Average unit cost of a proven offence in response to crime =

£580 + £12,841 + £365 + £44,376 = £58,162

= **£58,200** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.3* – Unit cost of a proven offence in response to crime, by type: *Robbery*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £11,120[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[27.1%][17] X [298 days] [18] X [£1.15 per day] [16] = £93.17

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[68.2%][17] X [423 days] [18] X [£1.15 per day] [16] = £332.77

Unit cost of Offender Management teams = £93.17 + £332.77 = £426.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[68.2%][17] X [23.8 months] [19] X [£2,792 per month] [16] = £45,313.

Average unit cost of a proven offence in response to crime =

£580 + £11,120 + £426 + £45,313 = £57,439

= **£57,400** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.4* – Unit cost of a proven offence in response to crime, by type: *Theft Offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £4,732[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[28.6%][17] X [298 days] [18] X [£1.15 per day] [16] = £98.42

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[24.7%][17] X [423 days] [18] X [£1.15 per day] [16] = £120.33

Unit cost of Offender Management teams = £98.42 + £120.33 = £219.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[24.7%][17] X [4.7 months] [19] X [£2,792 per month] [16] = £3,226.

Average unit cost of a proven offence in response to crime =
£580 + £4,732 + £219 + £3,226 = £8,757
= **£8,800** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.5* – Unit cost of a proven offence in response to crime, by type: *Criminal Damage & Arson*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £525[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[30.2%][17] X [298 days] [18] X [£1.15 per day] [16] = £103.71

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[22.7%][17] X [423 days] [18] X [£1.15 per day] [16] = £110.55

Unit cost of Offender Management teams = £103.71 + £110.55 = £214.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[22.7%][17] X [15.2 months] [19] X [£2,792 per month] [16] = £9,613.

Average unit cost of a proven offence in response to crime =

£580 + £525 + £214 + £9,613 = £10,932

= **£10,900** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.6* – Unit cost of a proven offence in response to crime, by type: *Drug Offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £2,949[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[9.9%][17] X [298 days] [18] X [£1.15 per day] [16] = £34.12

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[9.1%][17] X [423 days] [18] X [£1.15 per day] [16] = £44.55

Unit cost of Offender Management teams = £34.12 + £44.55 = £79.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[9.1%][17] X [17.8 months] [19] X [£2,792 per month] [16] = £4,530.

Average unit cost of a proven offence in response to crime =
£580 + £2,949 + £79 + £4,530 = £8,138
= **£8,100** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.7* – Unit cost of a proven offence in response to crime, by type: *Possession of weapons*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £2,491[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[47.1%][17] X [298 days] [18] X [£1.15 per day] [16] = £161.99

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[29.6%][17] X [423 days] [18] X [£1.15 per day] [16] = £144.55

Unit cost of Offender Management teams = £161.99 + £144.55 = £306.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[29.6%][17] X [6.8 months] [19] X [£2,792 per month] [16] = £5,614.

Average unit cost of a proven offence in response to crime =

£580 + £2,491 + £306 + £5,614 = £8,992

= **£9,000** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.8* – Unit cost of a proven offence in response to crime, by type: *Public order Offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £2,491[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[36.8%][17] X [298 days] [18] X [£1.15 per day] [16] = £126.48

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[26.2%][17] X [423 days] [18] X [£1.15 per day] [16] = £127.74

Unit cost of Offender Management teams = £126.48 + £127.74 = £254.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[26.2%][17] X [3.4 months] [19] X [£2,792 per month] [16] = £2,506.

Average unit cost of a proven offence in response to crime =

£580 + £2,491 + £254 + £2,506 = £5,832

= **£5,800** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.9* – Unit cost of a proven offence in response to crime, by type: *Miscellaneous crimes against society*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £2,491[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[32.8%][17] X [298 days] [18] X [£1.15 per day] [16] = £112.79

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[27.4%][17] X [423 days] [18] X [£1.15 per day] [16] = £133.88

Unit cost of Offender Management teams = £112.79 + £133.88 = £247.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[27.4%][17] X [6.0 months] [19] X [£2,792 per month] [16] = £4,623.

Average unit cost of a proven offence in response to crime =
£580 + £2,491 + £247 + £4,623 = £7,941
= **£7,900** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.10* – Unit cost of a proven offence in response to crime, by type: *Fraud Offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £3,661[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[48.6%][17] X [298 days] [18] X [£1.15 per day] [16] = £167.16

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[17.6%][17] X [423 days] [18] X [£1.15 per day] [16] = £86.04

Unit cost of Offender Management teams = £167.16 + £86.04 = £253.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[17.6%][17] X [9.1 months] [19] X [£2,792 per month] [16] = £4,464.

Average unit cost of a proven offence in response to crime =
£580 + £3,661 + £253 + £4,464 = £8,959
= **£9,000** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.11* – Unit cost of a proven offence in response to crime, by type: *Summary non-motoring offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £767[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[9.4%][17] X [298 days] [18] X [£1.15 per day] [16] = £32.19

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[2.3%][17] X [423 days] [18] X [£1.15 per day] [16] = £11.08

Unit cost of Offender Management teams = £32.19 + £11.08 = £43.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[2.3%][17] X [1.3 months] [19] X [£2,792 per month] [16] = £79.

Average unit cost of a proven offence in response to crime =

£580 + £767 + £43 + £79 = £1,470

= **£1,500** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Figure A.12* – Unit cost of a proven offence in response to crime, by type: *Summary motoring offences*

Average unit cost of a proven offence in response to crime consists of:

Unit cost of police = £580[16].

Unit cost of courts = £406[16].

Unit cost of Offender Management teams:

Cost of community orders and suspended sentence orders:

[Proportion receiving a court order] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[3.1%][17] X [298 days] [18] X [£1.15 per day] [16] = £10.82

Cost of custodial supervision:

[Proportion receiving a custodial sentence] X
[Average time spent under supervision, in days] X
[Unit cost of offender management teams per day] =
[0.6%][17] X [423 days] [18] X [£1.15 per day] [16] = £2.97

Unit cost of Offender Management teams = £10.82 + £2.97 = £14.

Unit cost of imprisonment:

[Proportion receiving a custodial sentence] X
[Average time spent in custody, in months] X
[Unit cost of imprisonment per month] =
[0.6%][17] X [1.5 months] [19] X [£2,792 per month] [16] = £25.

Average unit cost of a proven offence in response to crime =
£580 + £406 + £14 + £25 = £1,025
= **£1,000** rounded to the nearest £100.

*** Presented in 2018/19 prices. Calculations may not sum to their total due to rounding.**

Part 2 Estimating the Average Time Spent in Employment

In order to ascertain the average length of time a CFO3 programme participant spent in employment once employment was obtained, we monitored 784 individuals who commenced on the programme in 2016/17 and who later gained P45 employment during 2017/18. The P45 data for each individual contained the date the employment started and for those individuals whose employment had ceased by the end of the period an end date was provided, as notified to HMRC by their employer. From this we can calculate the proportion still in employment for up to 12 months (see figure A.13). Employment end dates could only be provided if they fell on or before 31st March 2018. As such this data is right-censored, with the employment status of some individuals being known for less than 12 months.

Figure A.13 – Proportion of CFO3 programme participants still in employment at key intervals post employment start

Days Since Employment Commenced	Proportion still in Employment	N
1	100%	784
30	98.5%	784
90	93.2%	767
182	80.2%	706
365	53.0%	562

Of the 562 individuals who we were able to track for a full 12 months following the start of their employment, 53% were still in the same job after a year. Of the remaining 47% who left their employment within 12 months of starting, the length of time they spent employed is taken as the number of days between their start and end dates in the P45 data.

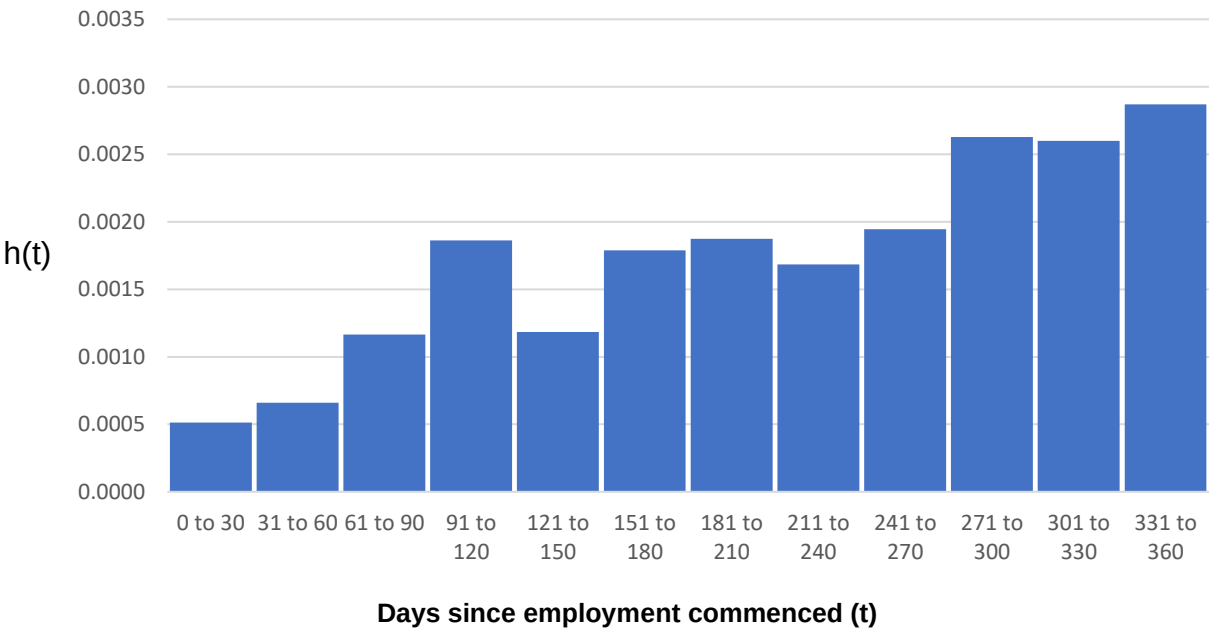
As we observe that 53% are still employed after a year, it seems reasonable to suggest that the median time spent in employment, that is the length of time at which half are still in the same employment and half are not, is a little greater at perhaps 13 months. We can also calculate a 12-month restricted mean, that is the average time spent in the same employment capped at a maximum of 12 months, of 290 days or 9 1/2 months. As we know that 53% of the cohort spent at least 12 months in the same employment, the unrestricted/true mean must be greater than 290 days.

In order to estimate the true mean we must predict what happens to those individuals who are still employed after 12 months e.g. what proportion will still be in the same employment after 18 months, 2 years, 5 years etc.? To do this we perform a survival analysis by fitting a survival function to the observed data and extrapolating beyond 12 months. A survival function (denoted S(t)) gives the proportion of individuals still in the

same employment after t days. The derivative of the survival function is the hazard function (denoted h(t)), which gives the proportion of individuals expected to leave their employment on day t given that they were still in the same employment after t-1 days.

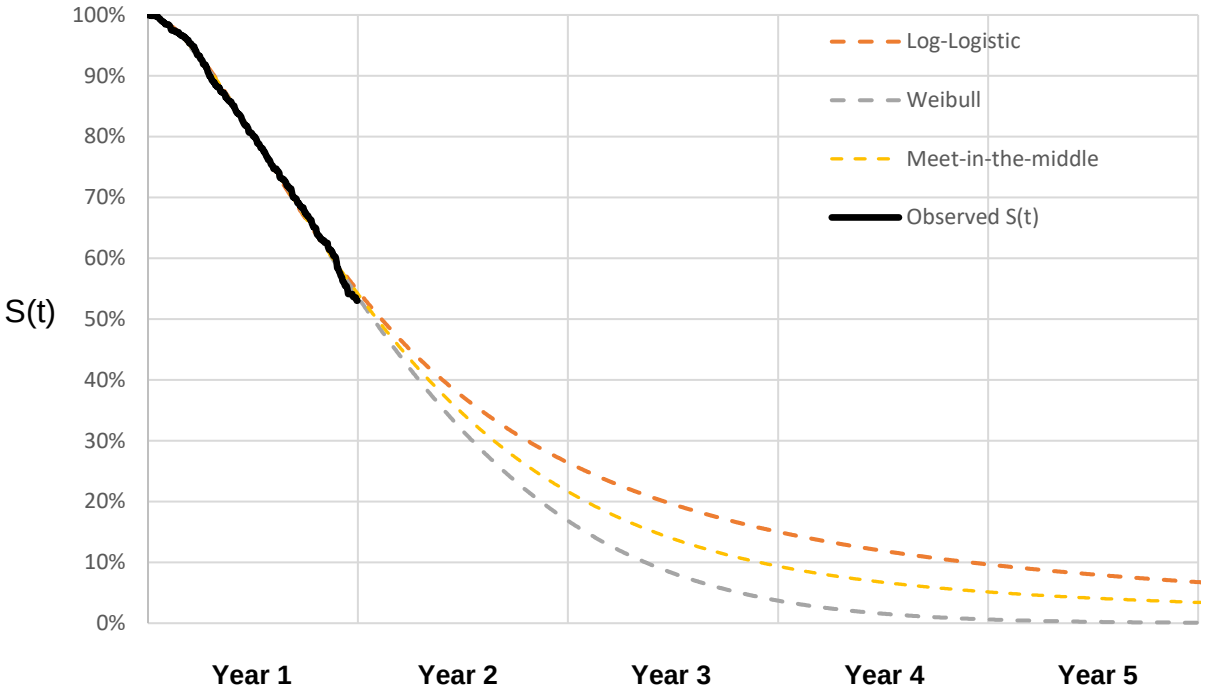
The most simplistic hazard function is one that is constant, in other words one where the proportion of individuals leaving their employment on any given day is the same. This results in the survival function taking the form of the exponential distribution. On inspection the observed hazard rate over the first 12 months is not constant, but rather increases over the first approximately 9 months before possibly levelling out (see figure A.14).

Figure A.14 – Observed hazard rate (h(t)) of CFO3 participants



What is unknown is what will happen to the hazard function after 12 months - will it rise, fall or remain constant from this point? Two commonly used distributions in survival analysis where the hazard rate changes are the Log-logistic and Weibull distributions. Unlike the exponential distribution with its constant hazard rate, both the Log-logistic and Weibull distributions allow for the hazard rate to change over time. Both distributions fit our data well over the first 12 months, however they provide very different outlooks beyond this point. After the initial 12 months the Log-logistic model predicts a fall in the hazard rate e.g. the longer an individual is in their current employment the less likely they are expected to leave it. This is analogous to a reduction in risk factors associated with leaving employment, improved loyalty, greater stability and increased incentive to stay with the employer. In contrast, the Weibull model predicts a rise in the hazard rate post 12 months, with individuals being increasingly less likely to hold down their current employment.

Figure A.15 – Comparison of Survival Functions (S(t))



As we have no evidence to suggest how the hazard rate may change after the initial 12 months, we propose taking an average of the Weibull and Log-logistic models, the result being a 'meet-in-the-middle' prediction (see figure A.15). As a comparison, the Weibull model predicts that virtually no one will still be in the same employment by the end of the 4th year, whereas this figure is closer to 10% for the log-logistic model. Our 'meet-in-the-middle' model provides an intermediate value of 5%. Ultimately, the Weibull model gives an estimated average time spent in employment of 500 days, the Log-logistic model gives an estimated average time spent in employment of 750 days, and our 'meet-in-the-middle' model gives an estimated average time spent in employment of 600 days. A 3.5% discount rate was then applied to the 'meet-in-the-middle' model, which gave us a **discounted average time spent in employment of 550 days** or 18 months. We propose using our 'meet-in-the-middle' estimate of 18 months as our 'best guess' scenario, while using the observed 12-month restricted mean value of 9 months for our 'worst case' scenario. The impact of reducing the average time spent in employment down to 9 months is considered in scenario D of the sensitivity analysis in Part 2 of this report.

Unfortunately, literature focussing on what happens to ex-offenders after they obtain employment is sparse, with most studies focussing on the acquisition of employment

itself rather than how long that individual spends in said employment. A Dutch study[32] looking at male working age prisoners who left custody between 2010 and early 2013, found that of those who found employment on release (n=208), 46.6% were still in employment 6 months later. It should be noted that these offenders were not part of a specific employment programme. Of those on the CFO3 programme, we observed that 80% of those in employment were still in the same employment after 6 months. In possible contrast to this, a recent study[33] in the USA found that employees with a criminal record had typically spent longer with their current employer than their non-offender counterparts. Although not focused solely on offenders or individuals with risk factors to employment, it seems the most applicable available study to our cohort is DWP's 2011 Destinations Survey[34]. Of those that had entered employment following a period claiming unemployment benefits, it was found that 58% were still in the same employment 7-8 months later. A further 13% were also still in employment but had since changed employer. We observed that 76% and 72% were still in employment after 7 and 8 months respectively.

Studies into the employment experiences of offenders typically use a survey approach for data collection rather than using large administrative datasets as we have. Our study deals only with evidenced P45 employment. Those whose income falls below the Lower Earnings Limit for National Insurance Contributions may not be included as employers are not required to inform HMRC of their employment. Additionally, those in self-employment are not included in the dataset. Care should be taken when making direct comparisons. Clearly there is a great deal of uncertainty surrounding how long offenders who move into employment can be expected to retain their employment, and there is a broad scope for improving how we assess the efficacy of employability programmes such as the CFO3 programme.

[32] Ramakers, A., Nieuwbeerta, P., Van Wilsem, J., Dirkzwager, A. "Not just any job will do: A study on employment characteristics and recidivism risks after release." International Journal of Offender Therapy and Comparative Criminology 61:16 (2017): 1795–1818

[33] Minor, D., Persico, N. & Weiss, D.M. Criminal background and job performance. IZA J Labor Policy 7, 8 (2018)

[34] Department of Work & Pensions (DWP) Destinations of JSA, IS & ESA leavers, 2011