Evaluating the Net Social Benefits of Youth Employment Programmes

A report for Tomorrow's People

Paul Bedford, May 2016[1]

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Foreword

On behalf of the Bank of England, I am pleased to present this report analysing the socio-economic benefits of the charitable work undertaken by Tomorrow's People with socially-disadvantaged young people across the country.

The work of Tomorrow's People is vitally important. At an individual level, it helps young people realise their potential and avoid becoming ever-more-distant from the labour market. At a societal level, it helps to break the vicious cycle between high unemployment and high levels of crime and poor health. And at an economic level, it delivers tangible economic benefits, as demonstrated in the report.

This report builds upon and extends earlier work by FTI Consulting, also conducted under the auspices of Pro Bono Economics (PBE). Tomorrow's People has forged a long and constructive relationship with PBE, and indeed further evaluation projects are already underway. In any analysis of this type, there is always scope to refine the analytical methodology or employ different assumptions, with possibly significant implications for the end-result. Expert judgment is often required. This is why PBE makes such an important contribution to the tertiary sector in general and Tomorrow's People in particular – involving professional economists enhances the credibility of assessments that are necessarily subject to some uncertainty.

The quantitative estimates presented in this report are, of course, still subject to a range of caveats and should not be interpreted too literally. But the overall message is clear: the work Tomorrow's People does with young people adds real economic value, and has continued to do so over an extended period and against the backdrop of significant changes in government policy as well as the economic environment.

The work of Tomorrow's People is so valuable to young people and to wider society, and I am delighted that Bank of England economists have given their personal time and expertise to help demonstrate the effectiveness of this impressive charity. The Bank's mission is to promote the good of the people of the United Kingdom. First and foremost, this is achieved by maintaining monetary and financial stability using the traditional levers of monetary and financial policy. But the Bank's economists can also make personal contributions to achieving our mission in other ways, as this report – and others like it under the PBE banner – so clearly shows. I hope and expect there will be many further such reports in future.

Mark Carney
Governor of the Bank of England

Executive Summary

This report – produced under the auspices of Pro Bono Economics for the national employment charity Tomorrow's People – evaluates the socio-economic benefits of the Working-It-Out (WIO) programme. Since its introduction in 2007, the WIO programme has helped more than 2,000 socially-disadvantaged young people aged 16-18 find employment or develop new skills through training and education. Our analysis, which updates an earlier study by FTI Consulting, finds that each £1 invested in the WIO programme between 2007 and 2014 has on average delivered economic benefits worth £3.80. This estimate is subject to some uncertainty, but nonetheless presents a strongly positive picture of the WIO programme's contribution to the lives of the young people that participate in it as well as British society more broadly.

Relative to the FTI study, we use additional data for the period 2012-2014 and also make a handful of methodological adjustments intended to deliver more robust results. These adjustments change both the level and the composition of the economic benefits delivered by the WIO programme, with the result that we estimate a higher benefit-cost ratio than FTI. We also find that the BCR has increased in latter part of our sample period, driven in the main by a significant expansion of the WIO programme – with no dilution in its effectiveness – while costs have been controlled. This is clearly an encouraging finding that suggests the WIO programme continues to develop and respond to changes in the economic environment. Nonetheless, we recommend that, going forward, TP should collect more granular data on the socio-economic characteristics of participants in the WIO programme in order to help identify more accurately the underlying drivers of the estimated BCR and how it evolves over time. It will also be beneficial to collect longitudinal data on the post-programme earnings of WIO participants, as well as their ongoing participation in the labour market, especially as the new national living wage is introduced.

As with all analyses of its kind, our study relies on a number of methodological simplifications and assumptions. The specific way in which the model is calibrated can have a significant impact on the final results, so our estimates should be treated with a degree of caution, especially when considered in an absolute sense. We have more confidence in our analysis of how the BCR has evolved over time, but even in this context small methodological adjustments can have a large impact. Future work could usefully aim to limit the sensitivity of the results to the underlying assumptions, although we recognise that there are practical constraints on what can be achieved while retaining analytical tractability. These methodological limitations should not, however, detract from the headline message that the WIO programme offers genuine economic benefits.

I. Introduction

Tomorrow's People (TP) runs charitable programmes designed to improve the employment prospects of individuals furthest from the labour market. The **Welfare-to-Work (W2W)** scheme focuses on the long-term employed and aims to help the most vulnerable members of society gain the qualifications and skills that can allow them to secure and retain a job. The separate youth schemes – principally **Working-It-Out (WIO)** – involve TP working with socially-disadvantaged young people aged 16-18, with the aim of encouraging active participation in the labour market, either directly or after a period of vocational training or further education. W2W is funded primarily by government contracts, while WIO operates primarily on the basis of charitable donations from private donors. Both schemes operate as umbrella programmes for largely-independent initiatives conducted at local level in different parts of the country.

FTI Consulting undertook a comprehensive study of the net social benefits of the TP programmes in 2011, using data for the financial years 2007-2011.[2] This study leveraged earlier analysis by Tank and Oxford Economic Forecasting (OEF) to devise a methodology for evaluating the economic benefits of TP interventions. The methodology evaluates the marginal impact of TP on the likelihood that a W2W or WIO programme participant will find and retain a job, on which basis the aggregate impact on expected future tax revenues and welfare payments as well as the costs of crime and health care is evaluated. It also makes an adjustment for the potential 'crowding-out' effect of charitable interventions in the labour market.[3] FTI concluded that, over the sample period, each £1 spent by TP delivered on average economic benefits worth £2.42. The benefit-cost ratio was slightly higher for the youth programmes (2.88) than for the W2W programme (2.34).[4]

This report presents an updated set of estimates for the benefit-cost ratio (BCR) for the WIO programme. Our analysis uses a slightly revised version of the FTI methodology and a longer history of data to produce annual BCR estimates for the financial years 2007 to 2014, encompassing a range of economic conditions.

Our methodological approach is, in principle, equally applicable to the W2W programme as to the WIO programme. There are, however, significant challenges to measuring the success rate for W2W interventions, especially following changes (introduced in 2011) to government funding arrangements that delay payment until a programme participant has retained a job for at least three (and in some cases six) months. Under the new arrangements, each W2W cycle runs for three years, during which time an individual participant may enter and exit the labour force on multiple occasions, making it difficult to identify exactly when a positive outcome has been achieved <u>during</u> the cycle. It is more straightforward to measure employment outcomes over the course of the full three-year cycle, but to date TP has not completed a sufficient number of cycles to obtain robust estimates of the marginal impact of the W2W programme on the likelihood of finding work. TP is currently reviewing how it captures and maintains data on the outcomes achieved by participants in the W2W programme.

By contrast, reliable data on the outcomes of WIO interventions are readily available. For each individual who completes a WIO programme, TP records whether he or she entered the labour force, undertook further education or training, or participated in voluntary work. Using the same basic assumptions as FTI, we are able to use these data to produce a credible measure of the marginal impact of the WIO programme on the employment prospects of young people.

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[2] FTI Consulting (2011), "*Measuring the social impact of the Tomorrow's People welfare to work and your programmes between 2006/7 and 2010/11*", June.
[3] By helping certain individuals secure a job, charities such as TP may reduce the likelihood other unemployed people are able to find work, offsetting some of the economic benefits.
[4] FTI uses the term 'Social Return on Investment (SROI)' in place of 'Benefit-Cost Ratio (BCR)'.

As with all social benefit analyses, including the FTI study, a number of simplifications and methodological compromises are necessary to produce a quantitative estimate of the BCR for the WIO programme. It is impractical to say whether the final results are systematically biased upward or downward – a number of different factors are at work. For these reasons, we caution against placing too much weight on the *absolute* estimates of the BCR, in favour of focussing on how the estimates vary over the sample period. The work of TP is directly affected by the wider economic environment as well as changes to government policy, meaning that the variability of the estimated BCR over time is a powerful indicator of how effectively the WIO programme adapts to and accommodates external change.

The remainder of the report is structured as follows: section II describes the additional data used in our analysis and outlines the – modest but not insignificant – adjustments we have made to the FTI methodology; section III presents our headline results for the BCR of the WIO programme over the period 2007-2014 and explains how they differ from the FTI estimates; section IV discusses the underlying economic drivers of our results; and section V concludes with some tentative suggestions for further work.

II. Data and methodology

The starting point for our analysis is the spreadsheet model developed by FTI Consulting in 2011 and made available to us by Pro Bono Economics.   This spreadsheet implements the methodology described in the FTI Report dated June 2011, but also includes a substantial amount of superfluous data and calculations that do not contribute to the final BCR estimates for either the WIO or W2W programmes. It also features at least two significant computational errors, as discussed below. We have attempted to simplify and correct the spreadsheet as far as possible such that it is more readily usable in future work (Section V).

Data

As discussed in Section I, our analysis focusses exclusively on the WIO programme. The data used fall into three broad categories:

a) The financial cost to TP of running and administering the WIO programme;

b) The outcome of WIO interventions, i.e. the number participants entering the labour force, enrolling in training schemes, undertaking further education, etc.; and

c) Historical data on youth unemployment and contemporary data on the minimum wage, tax rates / thresholds and benefit payments.

TP provided us with data for categories (a) and (b), organised by financial year.[5] For the earlier study, FTI had access to whole-period data for the financial years ending in (March) 2007 to 2010 and partial data for the financial year ending 2011. Our analysis is based on an extended sample window that includes whole-period data for all financial years ending between (March) 2007 and 2014. There were no material revisions to the pre-2011 data used by FTI.

For category (c), the data used by FTI are mostly in annual or quarterly time-series format. Where possible, we have extended the time-series using the same original source – typically the Institute for Fiscal Studies (IFS) or Office for National Statistics (ONS). In some cases, the IFS adjusted its data series to reflect changes in government policy since 2011, leading to some minor revisions to historical data. FTI used static 2010 data for hourly income by age group; our analysis updates these data with equivalent figures for 2013, from the same original source (ONS).

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[5] The results and analysis presented in this Report are necessarily only as reliable as the input data, the veracity of which has not been independently checked.

Estimating counterfactual unemployment rates

By far the most significant data series in category (c) is the youth unemployment rate. The FTI methodology attempts to capture the marginal impact of TP interventions on the probability of unemployment for programme participants, taking as a starting point the historical average unemployment rate for 16-24 year olds, calculated using quarterly ONS data for unemployment in two age groups: 16-17 years olds and 18-24 year olds. FTI used a figure of 15.4% based on data for the period 1992-2010. This figure is then scaled-up by a factor of three in order to capture the higher likelihood of unemployment among the socially-disadvantaged young people that typically enrol on the WIO programme.[6] The counterfactual 'year one' unemployment rate for WIO participants is thus measured at 46.1% in the FTI analysis – a figure that can be readily compared to the fraction of programme participants that achieve a positive outcome.

To capture the long-term economic effects of the WIO programme, the FTI methodology also estimates the counterfactual unemployment rate for WIO participants over time. TP does not track participants' employment outcomes (or earnings) beyond the end of the programme, so FTI needed to make some relatively strong assumptions. In particular, the FTI model assumes that the historical average unemployment rate for 18-24 year olds (15.4%) declines linearly each year such that, by year six, it reaches the historical average unemployment rate for 25-49 year olds (5.4%); and subsequently the historical average unemployment rate for the 50+ age group (4.6%) by year 35. The 3x scaling factor is maintained throughout the analysis, meaning that for WIO participants the counter-factual unemployment rate used by FTI declines from 46.1% in year one to 16.2% in year six and 13.8% in year 35.

Our analysis differs from the approach used by FTI in three respects:

1. *Computational error.* The FTI spreadsheet calculates a weighted average of historical unemployment rates for 16-17 year olds and 18-24 year olds. This is a logical approach, but the implementation is flawed because the weights are calculated on the basis of the number of unemployed people in each age group, which fails to capture the different size of the two cohorts. Instead, we use weights based on the total size of the labour force in each cohort – an adjustment that increases the original FTI estimate (using 1992-2010 data) for the historical unemployment for 18-24 year olds by 0.5 percentage points to 15.9%.

2. *Revised data sample.* The sample used by FTI – 1992 to 2010 – to estimate the long-run average youth unemployment rate is somewhat biased because it does not correspond to a full economic cycle. The weighted average unemployment rate (calculated as per above) for 16-17 years olds and 18-24 olds peaked at 18.3% in early 1993, before declining to around 12.5% in 2011 and then reaching a further peak of more than 25% in mid-2011. We believe that a peak-to-peak measure of unemployment is more appropriate, so use a slightly different data sample to FTI (1993-2011). This approach produces an estimate of the historical average unemployment rate of 16.2% – marginally higher than the (corrected) FTI estimate. We use the same data sample to calculate the historical average unemployment rates for the 25-49 and 50+ age groups as well, recognising however that the peak-to-peak cycle was marginally different for these age groups. The impact relative to the estimates used by FTI is negligible – the estimates for 25-49 year olds and the 50+ age group fall slightly to 5.3% and 4.4% respectively.

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[6] As described below, the scaling factor exerts significant influence on the final results. It is likely that the counter-factual unemployment rate for WIO participants will vary by location (the WIO programme encompasses numerous local initiatives) as well as through time, which makes producing consistent estimates of the BCR across years very difficult.

3. *Methodological adjustment.* FTI assumed that the counterfactual unemployment rate would decline relatively steeply, reaching the historical average for 25-49 year olds by year six, i.e. when most WIO participants (typically aged 16-18) would reach the lower boundary of this age group. This is a strong assumption – since unemployment tends to decline with age, we would expect the average unemployment rate for 25 year olds to be somewhat higher than for the 25-49 age group as a whole. For this reason, we adjust the FTI methodology such that the counterfactual unemployment rate declines linearly to the historical average unemployment rate for 25-49 year olds by year 17 (rather than year six), at which point typical WIO participants would have reached the mid-point of this age group. The significance of this adjustment is discussed further below.

The net effect of these changes on the time-profile of the counterfactual unemployment rate for WIO participants is shown in **Figure 1** below. Adjustments (1) and (2) together increase the year-one counterfactual unemployment rate by a little over two percentage points. This increase is significantly amplified over the forecast horizon by adjustment (3), resulting in a counterfactual unemployment rate that is up to 22 percentage points higher (in year six) than in the FTI analysis.

Figure 1: Comparison of counterfactual unemployment rates for WIO participants
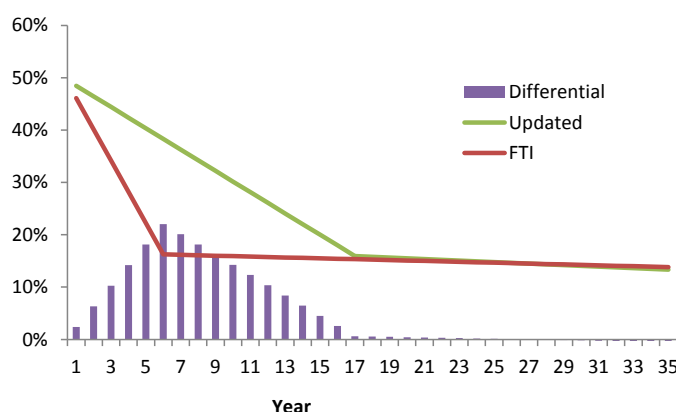
Sources: FTI, ONS and author calculations

Estimating future unemployment rates for WIO participants

Using TP data available in 2011, FTI estimated that the year-one realised (post-intervention) unemployment rate for WIO participants was 28.3%. With the benefit of additional data for the period 2011-2014, our estimate is slightly higher at 33.1%. This difference is mainly due to our higher estimate for the counterfactual unemployment rate, which is the starting point for estimating the impact of the WIO scheme on realised unemployment, amplified by a marginally lower average success rate for WIO interventions over our extended data period.[7]

As well as compiling year-one estimates, it is also necessary to project the future path of the realised unemployment rate, so that it can be compared to the estimated counterfactual rate described above. FTI assumed that the realised unemployment rate declines linearly over the first six years of the forecast horizon, remaining constant thereafter. The year-six (onward) unemployment rate is set equal to the estimate of the counterfactual unemployment rate in year 35. FTI do not fully justify this assumption, which implies that the WIO programme has an enduring and strongly positive impact on the employment outcomes of participants.

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[7] In this context, success is defined as a WIO participant securing employment or reporting that he/she is actively seeking work. We use the same adjustment as FTI to recognise that only a fraction (assumed to be 25%) of participants in the latter category will ultimately secure employment.

One plausible interpretation is that the WIO scheme effectively brings forward economic benefits that typically would be realised over a significantly longer time horizon in the absence of TP intervention. However, it seems unrealistic to assume that all the benefits of the scheme are realised in a relatively small part of the forecast horizon; and there is a high likelihood that at least some WIO participants who are successful in finding jobs during or shortly after the programme will subsequently become unemployed (or exit the labour market entirely). These factors suggest a somewhat more gradual decline in the realised unemployment rate would be appropriate.

Accordingly, we make the same adjustment as for the counterfactual unemployment rate and assume that the realised unemployment rate declines linearly until year 17 (rather than year six) before stabilising at the counterfactual for year 35. We acknowledge that this assumption is not necessarily more robust than the original FTI approach, but a more gradual path seems easier to justify intuitively and importantly also ensures that our methodology treats the counterfactual and realised unemployment rates equally (as did FTI). In the absence of granular information on the employment outcomes of WIO participants in the years after they complete the programme, some form of arbitrary assumption will always be necessary.

The combination of a higher starting point and our methodological adjustment result in an estimated path for the realised (post-intervention) unemployment rate that is materially higher than used by FTI, especially in the early years of the forecast horizon, as shown in **Figure 2**. The difference is, however, somewhat smaller, in percentage point terms, than for the estimated counterfactual unemployment rate (see **Figure 1** above).

Figure 2: Comparison of estimates for realised unemployment rates for WIO participants
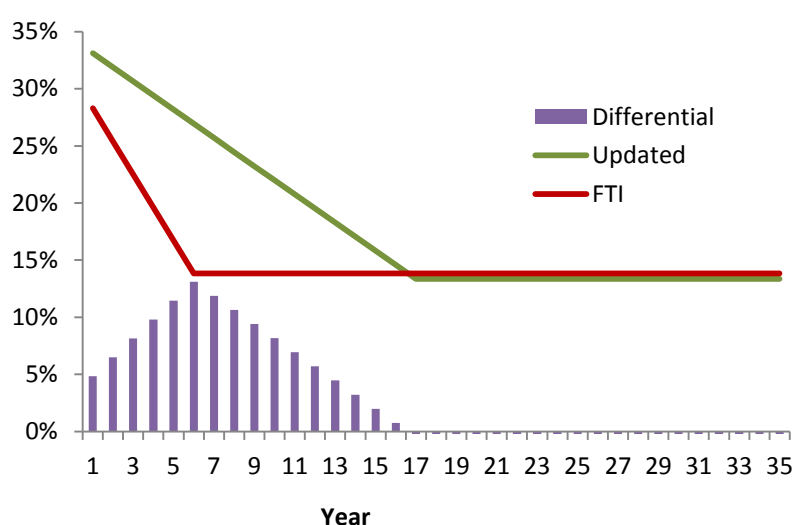
Sources: FTI, TP and author calculations

Estimating the impact of lower unemployment on tax revenues

The FTI spreadsheet uses the estimated unemployment rates described above to quantify the impact of the WIO programme on future tax revenues, benefit payments and the costs of crime and healthcare over a 20-year measurement horizon. The methodology is straightforward, albeit necessarily subject to a significant degree of uncertainty arising, for example, from unavoidable assumptions regarding *inter alia* future growth in wage rates and increases in tax thresholds. It also distinguishes (somewhat artificially) between the short- and long-run effects on government tax revenues and benefit expenditures.

We make a number of minor adjustments to the FTI spreadsheet in order to improve (at the margin) the reliability of the results and correct some computational errors:

1. *Personal tax allowance.* The FTI model estimates the year-one increase in tax revenues attributable to the WIO programme using a personal allowance that is held constant at the 2010 level (just under £6,500) for all years. Our estimates use the actual personal allowance in each year between 2007 and 2014 – an important adjustment given the rapid rise in the personal allowance between 2011 and 2014 in particular.

2. *Measurement horizon.* The FTI Report states that it measures the economic benefits of the WIO programme over a 20-year period, but the spreadsheet model appears to capture only 18 years; and also seems to assume there are zero benefits in year two.[8] The reasons for these anomalies are unclear. We extend the horizon to 20 years and estimate the economic benefits for year two in the same way as for year three onward.

3. *Long-run tax revenues from WIO programme.* The FTI spreadsheet erroneously used the estimated counterfactual <u>unemployment</u> rate to calculate the tax paid by WIO participants in the absence of any intervention from TP. The correct calculation uses the counterfactual <u>employment</u> rate.

Adjustment (3) – and to a lesser extent adjustment (1) – substantially reduce the estimated net increase in long-run tax revenues from the WIO programme, although the impact is offset slightly by adjustment (2). Adjustment (2) also increases the long-run benefits arising from lower benefit payments.

Other methodological issues

We retain all other elements of the FTI methodology without alteration. This includes the so-called "additionally factors" described in Section 9 of the FTI Report. FTI discuss a range of reasons why the net benefits of TP intervention should be scaled up or down, but ultimately conclude that only two factors are relevant to the analysis:

- *Displacement*, which can be interpreted as the opportunity costs of the funds invested in WIO programmes; and

- *Substitution*, which arises when a WIO participant secures a job which would otherwise have been taken by another (unemployed) worker.

FTI use a range of external estimates and expert judgment to conclude that displacement and substitution effects would reduce the net benefit of the WIO programme by 20% each, implying a cumulative reduction of 36%.

We also retain the discount rate (2%) used by FTI in order to measure all costs and benefits at constant 2011 prices. An alternative – and arguably more appropriate – approach would be to set the discount rate equal to the social rate of time preference (SRTP) specified in the HM Treasury Green Book. The implications of using a higher discount rate are discussed further in Section V below.

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[8] In the FTI spreadsheet, the short-run calculations refer to a one-year horizon, but then the long-run calculations start only in year three (for each WIO cohort).

III. Headline results

Our headline findings are presented in **Table 1** below. For convenience, we report the figures presented in the FTI Report alongside our own estimates, and divide the sample period into two segments (2007 to 2011 and 2012 to 2014) to aid comparability.

Table 1: Breakdown of results*

	FTI (2007-2011)	Current study (2007-2011)	Current study (2012-2014)	Current study (2007-2014)
Net economic benefit (£m)	**19.04**	**26.56**	**36.23**	**62.80**
Reduced benefit expenditures (£m)	*5.41*	*9.11*	*13.05*	*22.15*
Increased tax revenues (£m)	*9.49*	*6.72*	*9.02*	*15.74*
Reduced cost of crime (£m)	*3.73*	*9.81*	*12.96*	*22.77*
Reduced cost of healthcare (£m)	*0.41*	*0.92*	*1.21*	*2.12*
Adjusted net economic benefit (£m)**	**12.18**	**17.00**	**23.19**	**40.19**
Total cost of WIO programme (£m)	**4.23**	**4.98**	**5.59**	**10.57**
BENEFIT-COST RATIO	**2.88**	**3.42**	**4.15**	**3.80**

Source: FTI, TP and author calculations.

*   2011 prices. Figures may not tally due to rounding errors.
**   Incorporating additionality factors (see Section II).

We estimate that the benefit-cost ratio (BCR) for the WIO programme for the period 2007 to 2014 was 3.80, i.e. every £1 invested in the programme yielded economic benefits worth £3.80. Our headline estimate for the BCR is materially higher than the estimate obtained by FTI for the period 2007 to 2011 (2.88).

For the period 2007-2011, we find that the (unadjusted) net economic benefits of the WIO programme were more than £7m greater than estimated by FTI. The costs of the programme were also underestimated by FTI, since only partial data for 2011 were available at the time, but the net effect on the BCR is strongly positive. As well as producing larger economic benefits overall, the additional data and methodological revisions described in Section II materially change the composition of these benefits compared to the results presented in the FTI Report, as shown in **Figure 3**. The relative contributions from reduced benefit expenditures and (especially) reduced costs of crime increase sharply, while increased tax revenues play a smaller role.

Figure 3: Composition of net economic benefits, 2007-2011
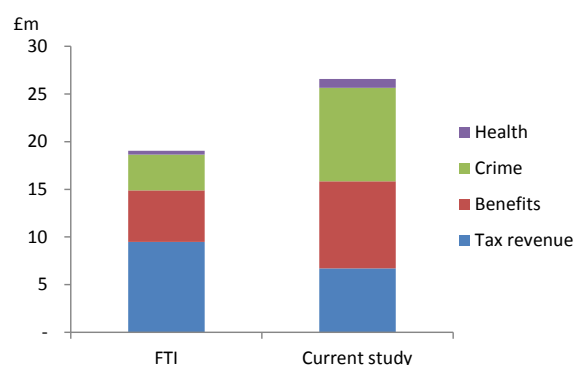
Sources: FTI, TP and author calculations.

Some of the difference in the scale and composition of the net economic benefits from the WIO programme between 2007 and 2011 is due to the inclusion in our analysis of data that were not available to FTI. The methodological adjustments described in Section II also make a significant contribution. Within these adjustments, two changes are especially important:

1) *Revised estimates of unemployment rates.* As shown in Figures 1 & 2, our estimates for the forward path of the counter-factual and realised unemployment rates for WIO participants differ materially from the paths used by FTI. These differences substantially increase the positive impact of the WIO programme on participants' future employment outcomes (relative to the counterfactual), especially during the middle years of the forecast horizon. Since higher rates of unemployment result in more crime, better employment prospects for WIO participants lead directly to a higher estimate for the prison and other costs saved as a result of TP intervention. Benefit expenditures are reduced for the same reason, again increasing the net economic benefit from the WIO programme.[9]

2) *Computational error in FTI spreadsheet.* As explained in Section II, the FTI estimates were based on an incorrect (and artificially high) measure of the impact of the WIO programme on long-run tax revenues.

Table 2 demonstrates the impact of these factors. If the original FTI paths for the realised and counter-factual unemployment rates are retained, the updated model produces estimates for the total economic benefits of the WIO programme (for 2007-2011) that are similar to the original FTI estimate, although the composition of these benefits is altered by the methodological adjustments described in Section II. Adopting our revised approach to forecasting realised and counter-factual unemployment rates increases the estimated net economic benefit by more than £6m, mainly through the cost-of-crime channel. Similarly, if the computational error in the FTI spreadsheet is not corrected, the net economic benefits of the WIO programme are artificially inflated by more than £3m, entirely through the (incorrectly measured) impact on tax revenues.

Table 2: Drivers of differences with FTI estimates of net economic benefits for 2007-2011*

	FTI	Current study (Factor 1 excl.)	Current study (Factor 2 excl.)	Current study (All included)
Net economic benefit (£m)	**19.04**	**20.27**	**29.65**	**26.56**
Reduced benefit expenditures (£m)	5.41	7.57	9.11	9.11
Increased tax revenues (£m)	9.49	6.74	9.81	6.72
Reduced cost of crime (£m)	3.73	5.46	9.81	9.81
Reduced cost of healthcare (£m)	0.41	0.49	0.92	0.92

Source: Author calculations.

* 2011 prices. Figures may not tally due to rounding errors.

IV. Economic drivers of results

One notable feature of our results (shown in **Table 1**) is the increase in the measured BCR in the latter part of the sample period. Taken at face value, this finding suggests that the WIO programme was more effective – in aggregate social welfare terms – between 2012 and 2014 compared to the period 2007 to 2011.

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[9] The extension of the measurement horizon from 18 years to 20 years also has a positive effect, but the impact is relatively marginal because economic benefits far in the future are heavily discounted.

According to our estimates, the net economic benefits of the WIO programme were more than 35% higher for the three-year period 2012 to 2014 than for the five-year period 2007 to 2011. To a large extent, this increase reflects the rapid expansion of the WIO programme – the average number of participants per year increased from 275 in 2007-2011 to 575 in 2012-2014, with a particularly pronounced increase in the final year of the sample period.[10] Increased participation naturally resulted in higher costs for TP, but costs per participant have fallen since 2012, especially following the step increase in the size of the WIO programme in 2014 (**Figure 4**), with the result that the increase in average annual costs between the 2007-2011 and 2012-2014 periods was just 12%.

Figure 4: Number of WIO participants and cost per participant by year
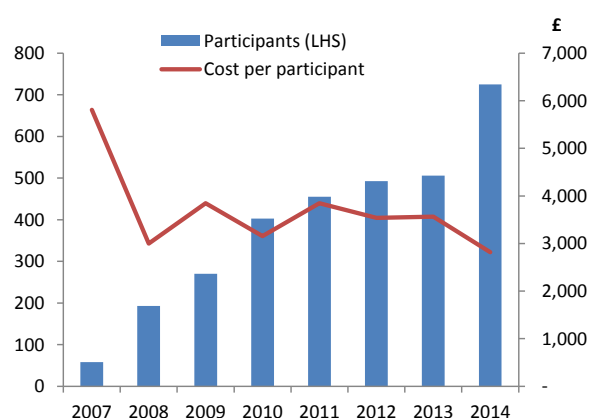
Sources: TP and author calculations.
Note: Cost measured at constant 2011 prices.

Declining costs per participant suggest that TP has realised some economies of scale from the expansion of the WIO programme. The costs data do not, however, provide any direct insight into whether the *quality* of TP interventions has been affected by the growth in the programme. Quality measurements are notoriously difficult, but there is little evidence to suggest any dilution in the effectiveness of the WIO programme. With the exception of a temporary dip in 2010, the proportion of WIO participants that successfully complete the programme has remained fairly constant across the full eight-year sample period (**Figure 5**). Similarly, the proportion of participants that secure employment by the end of the programme has remained fairly stable since 2009, albeit with somewhat more variation year-to-year – typically around 30-35% of participants who complete the programme successfully enter the labour force.[11]

These figures suggest that the marginal impact of TP interventions on the employment prospects of young people has remained fairly constant over time, despite the growth in the WIO programme. This may reflect the way in which the programme is organised, and in particular expansion by geography (i.e. starting new local schemes under the WIO umbrella) rather than by seeking to work with young people progressively further away from the labour force. It is, however, noticeable that the proportion of WIO participants undertaking training is trending upward, while the proportion enrolling in further education is moving in the opposite direction (**Figure 5**). This may be due to idiosyncratic factors, or may reflect a secular shift in the needs of the young people who participate in the WIO programme. It is, however, difficult to reach a firm conclusion in the absence of granular data on the socio-economic characteristics of WIO participants.

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[10] 725 young people participated in the WIO programme in the financial year to March 2014 – an increase of more than 200 on the previous year.
[11] This figure drops to 20-25% (also with relatively modest year-to-year variation) when measured relative to the total number of young people starting the WIO programme. These calculations also assume that 25% of participants classified as actively seeking work at end of the programme ultimately secure a job (see also footnote 6).

Figure 5: Breakdown of successful WIO outcomes (by cohort year)
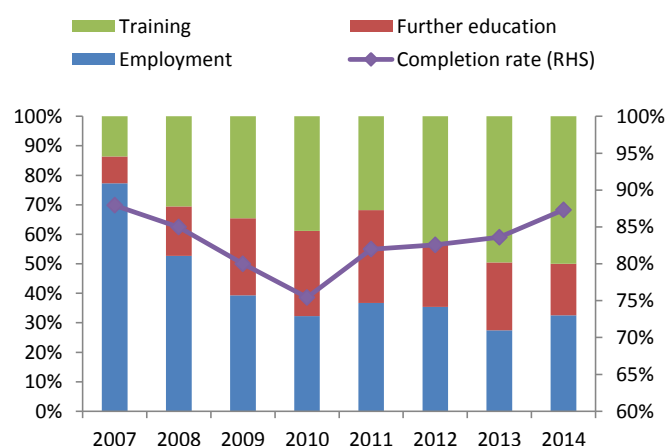
Source: TP and author calculations.

V. Conclusions and possible avenues for further work

Our analysis demonstrates clearly that the WIO programme delivers substantial economic benefits. It is, however, important to emphasise that the methodology used to produce our estimates involves a number of significant simplifications and assumptions. While to a large extent unavoidable, these methodological limitations mean that the margin of error around our BCR estimates is large and the absolute estimates should be interpreted with caution. We have relatively more confidence in our findings on how the BCR evolves over our sample period.

The underlying sensitivity of our estimates to certain methodological assumptions is evident in the impact (discussed above) of the fairly modest changes we have made to the original FTI spreadsheet. There are also a number of important components of the FTI model that we have not varied but which influence significantly the final BCR estimates. By way of illustration, **Table 3** presents the results from three simple comparative-statics exercises:

- Increasing the discount rate (DR) from 2% to 3.5%, in line with the social rate of time preference (SRTP) specified in the latest HM Treasury Green Book;

- Increasing the scaling factor (SF) used calculate the counter-factual unemployment rate for WIO participants from 3x to 4x; and

- Increasing the 'additionality factor' (AF) designed to capture the second-round effects of the WIO programme from 64% to 75%.

Increasing the discount rate to the SRTP (leaving all others parameters unchanged) reduces the estimated BCR by around 40 basis points, reflecting the lower present value of future economic benefits. By contrast, increasing either the scaling factor or the additionality factor has a strongly positive impact on the estimated BCR. Both of these parameters enter the model in a linear way, so the results shown in **Table 3** are representative of the general relationship between them and the estimated BCR – increasing either the scaling factor by 0.5 or the additionality factor by five percentage points increases the estimated BCR by around 30 basis points.[12]

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[12] Coincidentally, if the scaling factor is reduced from 3 to 1.5, with all other model parameters unchanged, the resulting BCR estimate for 2007-2014 (2.88) is exactly equivalent to the estimate obtained by FTI for the period 2007-2011.

Table 3: Impact of varying key model parameters*

	Baseline results	DR increased to 3.5%	SF increased to 4x	AF increased to 75%
Net economic benefit (£m)	**62.80**	**55.66**	**72.99**	**62.80**
Reduced benefit expenditures (£m)	*22.15*	*19.55*	*24.54*	*22.15*
Increased tax revenues (£m)	*15.74*	*13.78*	*15.26*	*15.74*
Reduced cost of crime (£m)	*22.77*	*20.44*	*30.36*	*22.77*
Reduced cost of healthcare (£m)	*2.12*	*1.89*	*2.83*	*2.12*
Adjusted net economic benefit (£m)**	**40.19**	**35.62**	**46.71**	**47.01**
Total cost of WIO programme (£m)	**10.57**	**10.50**	**10.57**	**10.57**
BENEFIT-COST RATIO	**3.80**	**3.39**	**4.42**	**4.46**

Source: TP and author calculations.

*   Costs and benefits measured for 2007-2014 period, at constant 2011 prices. Figures may not tally due to rounding errors.
**   Incorporating additionality factors (see Section II).

The scaling factor performs a particularly important role in the model. In essence, this parameter captures the extent to which a typical WIO participant is more likely to be excluded from the labour market than other young people.   It is very difficult to calibrate precisely, but clearly has a significant impact on the final results (as shown in **Table 3**). Future work could usefully explore in more detail unemployment rates for WIO-eligible young people who do not participate in the programme, so to provide a better basis for determining the appropriate scaling factor. This will require TP to collect more granular socio-economic data on WIO participants, for example on educational background and local employment prospects.

Future work could also explore in more detail the second-round effects captured in the so-called 'additionality factor'. These effects are difficult to quantify objectively, but the linear-adjustment approach used by FTI and in this study is clearly very crude and simplistic. For example, the possibility that there is some interaction between second-round effects and the other assumptions and parameters of the model (including the scaling factor) should be considered.

Finally, it is important to highlight that our estimates for the economic benefits of the WIO programme implicitly assume the participants who secure employment earn the minimum wage and work a standard working week (40 hours). FTI made the same assumptions, which are not unreasonable. Nonetheless, more accurate estimates could be obtained if TP systemically captured data on participants' post-programme weekly earnings – a step we believe should be relatively straightforward. The value of collecting these data will be further increased by the introduction of the national living wage, the introduction of which is likely gradually to change the employment and income prospects of the young people that the WIO programme aims to help. It is important that the programme – as well as evaluations of it – adapt swiftly to these environmental factors in order to continue the excellent (and clearly economically-valuable) results delivered so far.

Our analysis has focussed on the WIO programme, but could in principle also cover the parallel Welfare-to-Work (W2W) scheme also run by TP. To make this viable, however, TP will need to invest in collecting reliable, comprehensive and comparable data on the characteristics of W2W participants and the outcomes they achieve after participating in the programme, taking account of the new funding arrangements introduced by the government in 2011.