Regional Growth Fund Evaluation

Long term assessment

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Any enquiries regarding this publication should be sent to us at:

enquiries@beis.gov.uk

Contents

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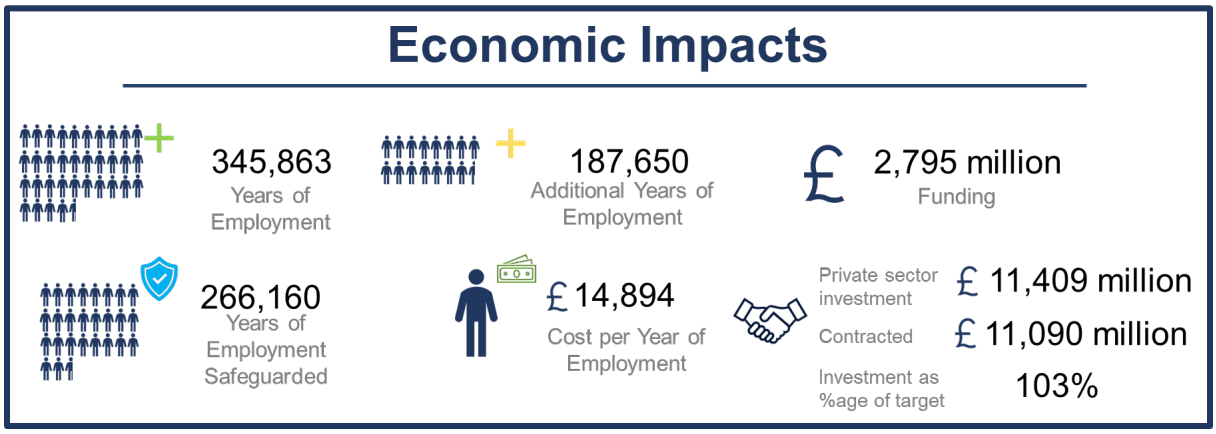
Executive Summary



This report presents the findings of the evaluation of the Regional Growth Fund. It assesses the economic impacts of the Fund.

The evaluation synthesises across evidence from econometric analysis of business performance, surveys of business beneficiaries and unsuccessful applicants, as well as case studies of selected large-scale, area-based programmes.

Headline Findings:

The RGF has allocated **£2.80 billion** to programmes and projects since 2011 with the aim to create and safeguard jobs and the RGF monitoring data reports **345,863 years of new employment and 266,160 years of employment safeguarded** across interventions in the four years after support. A challenge is estimating additional impact due to the RGF support:

- 187,650 additional years of employment have been created, with the largest contributions from the Regional Projects and Regional Programmes.
- Overall direct effects are 156,540 years of additional employment in supported businesses, and indirect effects of 31,110 additional years of employment due to investments in places then leading to employment. Costs per year of additional employment are just under £15,000.
- Turnover growth has mirrored these impacts; for the Regional Projects, Regional Programmes and AMSCI there was a wage premium in the jobs created.
- In Place-Based Programmes, case studies demonstrate progress towards meeting the expected impacts for safeguarded jobs and created jobs often had been exceeded.
- Beneficiaries surveyed reported on a range of wider benefits, such as efficiency improvements, spillovers into supply chains and R&D investment.

1 Overview of the Study

1. The Regional Growth Fund (RGF), launched in 2010 by the Departments for Business, Innovation & Skills (BIS)[1] and Department for Communities and Local Government (DCLG),[2] is aimed at promoting private sector led growth throughout England.

2. This evaluation report presents findings from (i) an econometric analysis of impacts where the beneficiary is a business, (ii) telephone surveys, including beneficiaries and unsuccessful applicants, (iii) case studies of selected large-scale, area-based RGF projects and programmes, and (iv) evidence from RGF monitoring data and (v) interviews with the leaders of RGF-funded projects.

3. The research took a phased approach and evidence has been gathered since 2015. Interim evaluation reports covered fieldwork and analysis in 2015 and in 2018. This evaluation report incorporates data collection and econometric analysis updated in 2021.

Regional Growth Fund Overview

4. The RGF was launched in the October 2010 Local Growth White Paper with the dual objectives to (HC, 2016):

a. stimulate enterprise by providing support for projects and programmes with significant potential for economic growth and create additional sustainable private sector employment; *and*

b. support in particular those areas and communities that are currently dependent on the public sector to make the transition to sustainable private sector-led growth and prosperity.

5. The RGF ran over six rounds, with options to apply for exceptional funding outside of the main bidding rounds. The RGF supports projects and programmes with a minimum application for funding of £1m. Some investments directly support a specific business activity, or a package of smaller projects, with BEIS contracting with businesses. Many investments, especially ones targeting small businesses and start-ups, are awarded to a programme operator which acts as an intermediary,

[1] BIS became the Department for Business, Energy and Industrial Strategy (BEIS) in July 2016
[2] CLG became the Department for Levelling Up, Housing and Communities in 2021

identifying support for individual businesses. Intermediaries include local authorities, LEPs and banks (NAO, 2014).

6. The evidence across the support types indicates that supported businesses are growing, both in terms of employment and turnover, faster than comparable businesses. The investments made by the RGF are resulting in additional economic activity. Real turnover growth, therefore, is comparable to the growth seen in employment. Shifting resources to more productive firms and sectors has benefits, and there is evidence that the new jobs created attract a significant wage premium. Overall, this implies that while the analysis did not find that RGF enhanced productivity growth in firms, it did mean that new jobs were created in higher paying roles. There is a compositional benefit from shifting labour resources in this direction.

7. RGF Projects and Programmes have been categorised into five schemes.

8. The first scheme is the **Regional Projects**, where firms and business consortia have received money directly from BEIS. These tend to be grants received by large businesses. Such projects typically involve capital investment by a business (e.g. upgrade/ expansion of premises or the installation of new plant and machinery).

9. Regional Projects have been analysed comprehensively, using econometric analysis of business data to track performance in terms of turnover and employment before and after support. A counterfactual is established, matching supported businesses with similar businesses in the wider Business Structure Database (BSD), using an ONS data source that records the turnover and jobs of all significant UK businesses. The study also reports findings from interviews with RGF Project leaders.

10. The second scheme category is **Place-Based Programmes**, projects and programmes with a spatial aspect. Investment is made through local authorities and businesses into roads, public realm, innovation/training centres and infrastructure development to support local development. The aim is to support many businesses indirectly, through the Programme investments making places more attractive for firms or unlocking areas for commercial developments. The Programmes have been analysed using a case study approach, targeting a selection of interventions to cover a large amount of programme funding and econometric analysis of employment impacts over and above what might have happened without the support.

11. A substantial share of RGF funding has been directed towards grant and loan programmes, in which funding has been given to a programme intermediary to distribute subsidies to firms in the form of grants and loans. These are directed to small and medium-sized enterprises (SMEs). The **National Programmes** is Scheme 3, where the intermediary acts across England. Many Programmes are asset finance schemes, funding investments in plant, machinery or vehicles. The fourth scheme, the **Regional Programmes**, are operated by local level intermediaries. Businesses

benefit from regionally targeted and tailored support. This is a diverse set of interventions, and intermediaries are public or arms-lengths bodies (including Local Authorities, LEPs and Higher Education Institutions).

12. The fifth scheme, **Advanced Manufacturing Supply Chain Initiative (AMSCI)** was designed to improve the global competitiveness of the UK advanced manufacturing supply chains. Businesses received funding to support research and development, skills training and capital investment to ensure UK supply chains achieve world-class standards and encourage new suppliers to locate to the UK.

Table 1.1: Regional Growth Fund Overview

	Description	Characteristics
Scheme 1: Regional Projects	Funding to individual businesses or consortia in excess of £1m to support investments, R&D and upgrades to plants.	258 Projects supported from 2011/12 to 2016/17, across 219 businesses
Scheme 2: Place-Based Programmes	Investments in transport, public realm and infrastructure to unlock commercial developments.	38 spatial interventions in 31 Local Authorities between 2013 and 2015
Scheme 3: National Programmes	Funding to intermediaries, such as banks, to then support SMEs with loans primarily, but also grants, advice and other support	31 Programmes involving over 17,000 businesses from 2012/13 to 2015/16
Scheme 4: Regional Programmes	Funding to local intermediaries to then support SMEs with grants, advice and other support	104 Programmes with over 15,000 business beneficiaries from 2012/13 to 2015/16
Scheme 5: AMSCI	Funding to support R&D, skills and investment in supply chains with projects often involving collaborations between primes and suppliers.	Three funded interventions which have supported 685 incidences of support, involving 473 businesses many collaborating, from 2012/13 to 2015/16

13. The ultimate beneficiaries in schemes three and four are small businesses, who are provided relatively modest sums. This has enabled RGF funding to reach smaller projects but introduces a range of additional evaluation issues to be addressed.

14. Evaluating the Fund's impacts has some challenges due to the diversity of intervention types and the different short- and long-term impacts envisaged. A scoping study was completed during 2014 to look at options for the evaluation (BIS, 2014). It addressed the underlying logic models used for different RGF types of investment and suggested various possible evaluation methods, drawing heavily from insight from past Regional Development Agency (RDA) evaluations. The scoping study recommended a staged approach and the use of mixed methods including quantitative analysis of micro and regional data, case studies of large-scale spatial projects and programmes, and surveys of beneficiaries that feature in this report.

15. BEIS commissioned the full impact and economic evaluation in summer 2014.

Key Performance Indicators

16. Table 1.2 indicates the total amounts allocated across the RGF rounds. RGF put in place Grant Offers with the organisations securing RGF support, setting quarterly targets for the number of jobs to be created or safeguarded. Each successful bid is monitored for compliance and progress against targets of employment, private sector leverage and additional outcomes of place-based programmes, such as attracting additional companies, raising land values or increasing social cohesion.

Table 1.2: RGF Funding Allocation by Scheme

£ million	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Not by round	Total
Regional Projects	91	134	229	62	58	46	131	752
Place-Based Programmes	61	254	57	16	2	-	-	389
National Programmes	175	22	172	67	49	69	-	554
Regional Programmes	4	199	326	142	63	74	16	824
AMSCI	53	45	25	51	102	-	-	276
Total	384	654	809	338	274	189	147	2,795

Note: Committed grant, excluding withdrawn projects and programmes; totals in this table include AMSCI which is excluded in RGF headline reported figures.

17. Addressing the RGF's objectives, an early focus was to create and safeguard private sector jobs and encourage private sector investment. RGF monitors the employment created and safeguarded each quarter, as Full Time Equivalents (FTEs) as well as the private and public sector match funding secured against the contracted targets.

18. By 2020, the RGF projects and programmes had contracted a total of 274,000 FTEs across the interventions' lifetimes. For the study, these estimates of jobs were complemented by estimating how many years of employment were created in the four years after support. These FTEs reflected 346,000 years of new employment and 263,000 years of employment safeguarded in Schemes 1-4.

19. The employment performance of supported businesses has also been tracked in ONS firm-level data made available through the Secure Research Service. The evidence of job creation across the schemes is corroborated by the number of employees added to payrolls by supported businesses as recorded in ONS data. The employment impacts were considered for the years following support. The

employment growth in the supported businesses reflected just under 346,000 job years of employment of which 258,000 years were in Schemes 1-4 (Table 1.2).

20. The years of employment or "job year" metric measures employment creation over a period, so that a business that employs in a year and then maintains that employment for two consecutive years would result in two job years. The approach taken was to assume that employment changes for up to the first four years after support were included, so that the new jobs in businesses supported in 2012 would only be included until 2016.

21. Comparing the ONS job years with the RGF monitoring information is difficult due to definitional differences. However, at a high level, Table 1.3 indicates that the analysis of ONS data is consistent with monitoring information. The RGF "Reported New Job Years" should be compared with the gross job years growth seen in ONS data for Schemes 1-4. Table 1.2 presents the evaluation results (the Gross Job Years and Additional Job Years columns) alongside the monitoring information about reported new jobs.

22. The table presents the RGF monitoring data and ONS data scheme by scheme. RGF Regional Projects started in 2011 and, by 2015, contracted jobs had passed its peak. The job years estimated in monitoring data is marginally higher than the new jobs found in the ONS data, reflecting mainly the payrolls of the business. For Place-Based Programmes, the ONS data uses place definitions which are larger than the monitoring data, so the estimates from the ONS data are higher. For the National and Regional Programmes, lists of beneficiaries had to be obtained and matched to the ONS registers. Collating lists of beneficiaries is complex, and some coverage issues are likely.

23. For economic impact evaluation, these gross impacts are adjusted to take account of what would have happened without support. Statistical modelling has been used to identify a counterfactual – a set of businesses or places similar to those supported by RGF but not receiving support. Each scheme has been evaluated using econometric analysis adapted to the type of beneficiary, integrating spatial and case study evidence for place-based programmes.

24. The additional jobs column indicates how many of the created job years are additional, in that there is evidence that they would not have happened without RGF support. For schemes 1, 3, 4 and 5, these are direct effects on supported businesses. For the Place-Based Programmes, the evidence supports indirect effects as investments into places have made them more attractive for businesses. 187,650 additional years of employment have been created, with the largest contributions from the Regional Projects and Regional Programmes.

Table 1.3: RGF Employment Outcomes by Scheme for Early Rounds

	Gross Job Years **First four years after support**	Additional Job Years **First four years after support**	Reported New Jobs Years **First four years after support**
Estimated using	**ONS BSD**	**ONS BSD less jobs in counterfactual**	**RGF Monitoring Information**
Regional Projects	57,653	49,417	60,333
Place-Based Programmes*	38,581	31,110	27,711
National Programmes	57,547	34,944	134,579
Regional Programmes	104,777	48,607	123,796
AMSCI	87,305	23,572	n.a.
Total	**345,863**	**187,650**	**346,419**

Note: Gross and Additional Job Years are findings from the econometric analysis and are broken down in the following chapters. The new jobs by November 2020 represent the actual FTEs reported for projects and programmes across all rounds. *until Sept 2019

25. A further key performance indicator for RGF is the co-investment by the private sector alongside the RGF investments. The largest amount of private sector match was through Regional Projects, which constitutes the largest single scheme and comprises large grants for large firms. Most of the private sector match has now been leveraged, with National and Regional Programmes indicating additional private sector investment by November 2020 (£248m or 116% and £735m or 129% raised more than the lifetime contracted amount respectively).

26. The evaluation has involved analysing other data about the beneficiaries, some collected for the study, and some provided by administrative, or survey data held at ONS. Table 1.4 highlights some of the additional insight provided by this.

27. The jobs created in supported businesses often involved people moving to the supported businesses from other businesses. The ONS Annual Survey of Hours Earnings (ASHE) collects the wages paid to 1% of employees in payrolls in Great Britain. As ASHE tracks the same individuals over successive years, the change in average wages as RGF beneficiary businesses hire can be measured. This proves high for the Regional Projects and the National Programmes. This does not indicate that RGF has caused wages to increase, but more that the jobs created tend to be in businesses that pay higher wages. Therefore, in aggregate, average wages will rise due to the intervention.

Table 1.4: Other RGF Outcomes by Scheme

	Job Quality, Employment Impacts and Productivity	Capital Projects, Business Gains and Wider Community Impacts
Regional Projects	Wage Premium: 22% earnings increase Increased overtime pay, hiring of specialised personnel, 1% increase in earnings growth, safeguarding of local jobs, apprenticeships and graduate schemes, competitiveness and productivity, international investment, capability and new customers.	Increased R&D, refurbishment of plants and new facilities, manufacturing and global competitiveness; improvements of production capabilities, efficiency and regulatory standards. Enhanced university collaboration and technical knowledge, positive impacts on neighbouring areas and economies and projects focussing on local and sectoral supply chains.
Place-Based Programmes	Increased employment for young people, indirect job creation and attraction of co-investment.	Improvements in public places, cycle routes and sustainable transport; ecological benefits; extended business operating hours and increased communities trust and opportunities for local business.
National Programmes	Wage Premium: Higher earnings and working hours. Increased employment rates and higher business turnover. Average annual median profit increased by £33,000.	Investment in specific equipment and machinery, increased R&D, improvement in efficiencies, training and external finance.
Regional Programmes	Wage Premium: 18% earnings increase. Increase in recruitment and retention and 37% increase in NEET employment. Growth in sales and increased annual profit by £29,000.	Positive impact on labour force. Investment in specific equipment, machinery and property purchase or development; increase in efficiency; development of new products and services; increased training, activity and R&D and easier to gain access to external finance.
AMSCI	Employment of youth apprentices. Skillset and knowledge gains for employees. Efficiency gains. Employment gains 26%.	Projects occurring domestically rather than foreign countries. Spillovers into supply chain, gains to other industries' efficiency. Collaboration and communication within industry, and between industry/university; Improvements to handling of Covid-19; R&D increased; Environment benefits

28. Table 1.4 highlights findings from the survey of RGF beneficiaries. The surveys focused on the National and Regional Programmes in 2015-16 and, in 2021, on AMSCI. The survey indicates that the jobs created and safeguarded were filled by those previously not in education, employment or training (NEET). Surveys also provide evidence for wider impacts, with businesses highlighting RGF support allowing investment and the development of new products and services. This

included effects as primes collaborated with supply chain businesses in advanced manufacturing (AMSCI).

Methods

29. The purpose of the evaluation is to:

- assess medium term impacts of the RGF, with a focus on employment impacts across the rounds. This includes estimates of gross and net additional job creation and an analysis of the quality of those jobs using earnings analysis.
- synthesise the evaluation findings to date; *and*
- present preliminary findings on future viability and sustainability of impacts that emerge at this stage.

30. This report summarises results based on: (i) an econometric analysis of firm-level impacts where the beneficiary is a business; (ii) beneficiary surveys conducted after support for three schemes; (iii) a series of case studies of selected large-scale, Place-Based Programmes and one National Programme; (iv) some depth interviews of the managers of projects undertaken by businesses; and (v) an econometric analysis of area employment for the Place-Based Programmes.

31. The different analysis used for each scheme and the coverage of the analysis – as percentage of grant allocated in the funding rounds – are indicated in Table 1.5.

Table 1.5: Evaluation Methods and Coverage

Scheme	Rounds	Grant (£m)	Report Chapter	Evaluation
Regional Projects	1-6, eRGF	752	2	Econometric Analysis of all projects 100% Case Studies: £79m (11%)
Place-Based Programmes	1-6, eRGF	389	3	Econometric Analysis of all programmes (100%); Case studies of programmes allocated £230m grant (60%); Occupant survey (one programme)
National Programmes	1-6, eRGF	554	4	Econometric Analysis of beneficiaries of programmes allocated £408m grant (73%); Business Survey
Regional Programmes	1-6, eRGF	824	5	Econometric Analysis of beneficiaries of programmes allocated £571m grant (69%); Case study of programme allocated £31m grant (4%); Business Survey
AMSCI	1-5	276	6	Econometric Analysis initiative allocated £276m grant (100%); Case studies focusing on primes (11% leading consortiums receiving more); Business Survey
Total		**2,795**		

Note: As budgeted by November 2021. eRGF is Exceptional Regional Growth Fund; ministers reserve the option to use the eRGF funding to respond quickly to significant economic shocks or exceptional bids that present an opportunity to secure internationally mobile investment.

32. The econometric analysis looks at firm-level impacts, using longitudinal observations of employment and turnover at an enterprise and workplace level in the Business Structure Database (BSD), described in the box. The data used is annual, covering 2010 (BSD 2011, which uses administrative and survey data from the previous year) to 2019 (BSD 2020).

33. In addition to the creation and safeguarding of jobs, further impact derives if the quality of the jobs is high. The evaluation has looked at the wages of employees in supported businesses, using the Annual Survey of Hours and Earnings (ASHE), and then considering comparators. Wages are viewed as a proxy for the quality of jobs, with any evidence of a wage premium suggestive of higher quality or more productive job.

34. For the study, a survey was conducted of the applicants of the National and Regional Programmes, covering both successful applicants and those rejected support. The surveys were conducted over the phone three years after application and – as well as looking at the direct impacts on businesses – considered wider impacts and views of the RGF scheme.

35. For the place-based interventions, the study conducted 17 detailed case studies. Each involve over thirty interviews with the fieldwork occurring at two points in the intervention's lifecycle, so capturing expectations early and then contrasting with views as delivery occurred. For the place-based interventions the study also includes an analysis of local area employment outcomes, developing a counterfactual to attribute impacts to the interventions.

ONS Business Structure Database, ASHE and the Annual Business Survey

Each year, the Business Structure Database (BSD) takes a snapshot of the industry, location, employment and turnover of the businesses recorded on the ONS Inter-Departmental Business Register (IDBR). IDBR is the live sampling frame used for ONS business surveys and the BSD – through its annual compilation – provides a longitudinal dataset of the UK's economically significant businesses. Using BSD, business births and deaths can also be identified. As IDBR records each workplace within a business, BSD can also be used to track relocations and the opening of new locations.

For this study, the business beneficiaries and unsuccessful applicants of RGF support were collected, then matched to their Companies House number, and transferred to ONS SRS for matching to the BSD. As the BSD seeks to cover all significant businesses, the resulting dataset has performance evidence for both RGF businesses and all other businesses that is consistent and comparable. This allows analysis to compare the performance of supported businesses with different groups of comparable and unsupported businesses drawn from the BSD. The largest businesses are more likely to have participated in the ONS Annual Business Survey, which is also stored in the ONS SRS and can be linked to the BSD. Where RGF beneficiaries are large, this has allowed analysis to use the ONS survey data, linked to the BSD, to analyse performance on other economic impacts, such as business investment.

A further data source used in this study has been the Annual Survey of Hours and Earnings (ASHE). Each year, ONS surveys businesses about the pay, hours, occupation, age and gender of one percent of employees. The ASHE design tracks individuals that have moved jobs being surveyed in their new employer's return and previous employer's return. This is because – working with HMRC – the ONS has sampled using National Insurance numbers and ensuring that the same numbers, and so individuals, are selected each year. ASHE is particularly valuable because of the scale of the survey meaning that samples are large, even when focusing on RGF supported businesses.

Structure of the report

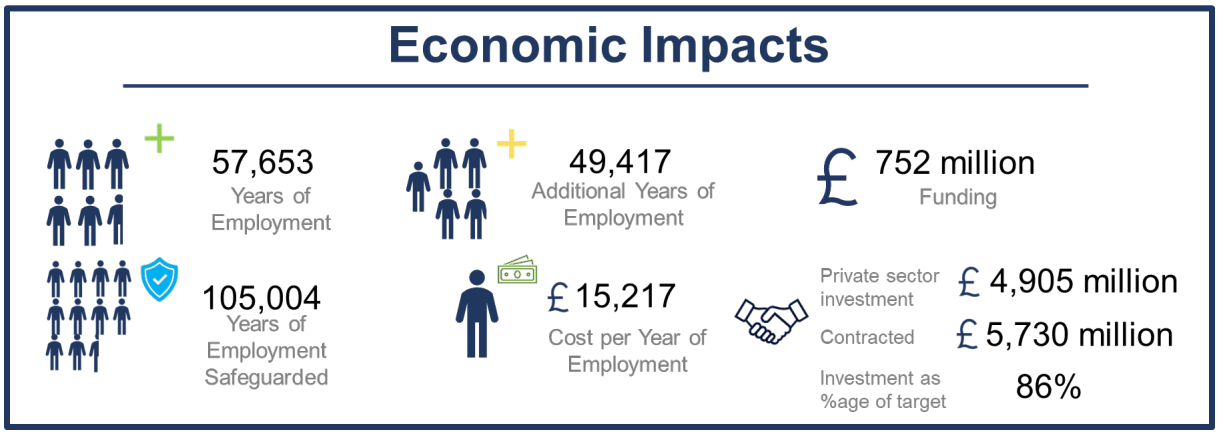
36. The Regional Growth Fund: Impact and Economic Evaluation was started in 2014. It completed four rounds of analysis, each mixing econometric analysis underpinned by data-linking, case studies involving depth interviews, surveys of businesses, covering beneficiaries and unsuccessful applicants. There has been extensive use of monitoring data, and the study has collected lists of the beneficiaries supported by National and Regional Programmes, at four points during 2014-19, from intermediaries that ran programmes.

37. There were six rounds to the RGF and, alongside this, there was RGF support provided between funding rounds where timing was considered as critical, exceptional RGF (eRGF). The report covers all rounds and eRGF. The initial evaluation covered four of the five schemes and the fifth scheme, the Advanced Manufacturing Supply Chain Initiative, was included in the final stage of the evaluation. The next chapters of this report explore the impacts of these, looking at each scheme in turn.

38. This report draws from two complementary reports:

- Regional Growth Fund: Evidence from Econometric Analysis
- Regional Growth Fund: Case Studies Summary Report

2 Regional Projects: Scheme 1



Businesses benefiting from RGF funding through Regional Projects are generally large, reflecting the eligibility criteria targeting businesses for £1m level of minimum funding. They typically have a thousand employees, many times larger than the average business. They are seven times more likely than the general business population to be manufacturers and five times more likely to be high technology businesses.

This chapter presents estimates of the additional employment created in the 219 businesses that received RGF project support. It also investigates the wages paid in the jobs created.

Findings

- Adjusting for the employment growth seen in comparable businesses, up to 49,417 additional job years were estimated to have been created or safeguarded.
- However, finding comparable businesses for the projects has proven difficult. There is a great deal of unexplained change in employment.
- Of the 57,653 job years created in the project supported businesses treated 2011-2014, all models estimate significant additionality, meaning that between 16,472 and 49,417 job years were additional.
- The evidence indicates the jobs are high quality: supported businesses have highly paid jobs and employees switching to the supported plants have pay rises higher than other job switchers.
- Interviews indicated how RGF funding – primarily refurbishing plants or investing in new, often research focused, facilities – had improved

efficiency and production processes, such as through R&D focused projects, several businesses were able to improve their manufacturing practices or attain higher regulatory standards. It also encouraged continued operation of businesses in the UK where businesses were considering location options.

Econometric Analysis

1. There are 258 RGF Regional Projects supported, across several cohorts of support. The cohorts have been grouped by financial years, from 2011/12 to 2016/17. As a small number were supported in the final two financial years these have to be grouped together occasionally to avoid results being disclosive.

2. The number of businesses supported through the RGF Scheme 1 support is somewhat fewer than the number of projects as some businesses successfully applied for more than one support. Overall, there were 219 businesses that were supported through RGF Scheme 1 funding.

3. The Regional Projects provided funding to large businesses, frequently having multiple plants and operating at a global scale. The analysis has therefore identified which plants within the large businesses are being supported and differentiated these units from the enterprise's other plants and establishments. Measures of employment and performance are taken at this plant level.

4. It is challenging to identify a counterfactual group for the businesses that have benefitted from RGF project funding. This is partly due to the complexity of the businesses, and the number of supported businesses is quite low. The most robust estimate is found when the beneficiaries across all cohorts are pooled, as this increases the number of observations considerably.

5. For the evaluation, careful consideration of alternative matching pools led to the decision not to use the unsuccessful RGF project applicants. In using the unsuccessful project applicant pool, matching the whole range of supported businesses proved impossible, with several beneficiaries having to be dropped as no comparable unsuccessful applicant was available. The preferred control group for the RGF projects was instead drawn from the wider BSD, which improved the analysis by providing a wider range of businesses from which to draw comparable businesses.

6. In addition to the creation and safeguarding of jobs, the evaluation has analysed the quality of created jobs. This assesses the wage premium associated with the jobs created using the Annual Survey of Hours and Earnings (ASHE). Workers earn a "wage premium" if their wage is higher than it would have been in a different business or occupation given their ability, skills and experience. A premium

may arise if the worker is more productive, and the higher wage is considered as reflecting this. The evaluation has therefore estimated wage premiums to assess the impact of RGF support and the full methodology is annexed.

Employment and productivity impacts

7. To understand the additional impact of Regional Project support on employment, the change in beneficiary businesses was compared with a matched counterfactual. A difference-in-difference estimation was used to compare the change observed in a treated group with that seen in the control group. Comparing across models and matched groups also allows some initial analysis of the sensitivity of employment outcomes to the control group used. Different control groups are used to estimate this, using counterfactuals derived from combinations of different match pools and model specifications. The control group is chosen based on factors that went into the selection of projects for the RGF, the preferred model finds a counterfactual group based on age, number of employees, if the business has capital and plant stock, if the business is UK owned or R&D active or located in London/South East. Model I adds previous employment growth and value of support before and Model II adds industry variables.

8. The employment changes seen in the supported businesses is tracked in the ONS firm-level data. Using BSD's plant level employment data – known as a reporting unit – there were 12,829 jobs in 2011 in the 36 plants that benefitted from RGF projects that year, around 56,000 in each of the next two years where there were 68 supported businesses in both, and about 34,000 in the final three cohorts.

9. Tracking these businesses over the years after support provides an estimate of the growth in employment. There were 57,653 years of employment created in the 219 businesses in the four years after support. Adding together the annual jobs created for each year after support and grouping businesses by the year of support provides the years of employment (job years) estimate. For the oldest projects that started in 2011 this could mean aggregating over as much as nine years, which is far longer than project employment impacts were expected to last. Consequently, the calculation focuses on the first four years after support.

10. To understand what portion of employment created is additional, the analysis looks at growth impacts after treatment. The change seen in supported businesses was compared to that seen in comparison groups, pooling across all RGF project beneficiaries. Figure 2.1 shows the growth trajectories of employment in project beneficiaries and comparison groups in the individual plants supported through RGF Projects, both at the enterprise level and the preferred Reporting Units.

11. Of the 57,653 job years created in the supported businesses, the preferred model indicates that 49,417 of these would be additional job years occurred in supported businesses, but not in the comparison groups.

12. An accompanying econometric report details how the additional employment is estimated. Employment growth is estimated for a four-year period after support. The change seen in supported businesses was compared to that seen in control groups. In the supported businesses average employment was 14.2% higher in supported units two years after projects had started and 23.3% higher four years after.

13. When comparable businesses (control group) are selected from the wider BSD using the preferred model, the control group's employment grows somewhat so that the difference between supported businesses and this comparator is plus 11% and highly significant. This is also the case in other models and suggests that 79% of the employment seen in the beneficiaries is not seen in the counterfactual and is additional.

14. Figure 2.1 indicates a range of other variables tracked in the data for the supported businesses and comparison groups, the "control group" is the preferred comparison group, with "Mod I" and "Mod II" being sets of businesses selected using alternative models and "Unmatched" indicating the growth across businesses before any statistical matching.

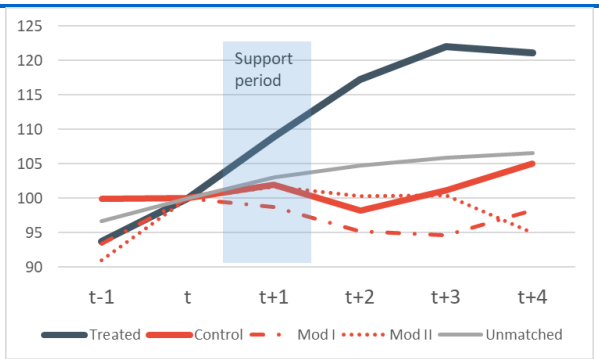
15. As many businesses have multiple plants, there is a risk that looking at additional employment only in the plant of interest would miss reallocation of work across plants. It is likely that businesses with several locations will – in the years after investment – seek to maximise the use of new plants, perhaps siting new work into these plants. This reallocation has been observed in other studies, such as evaluations of the Regional Selective Assistance.

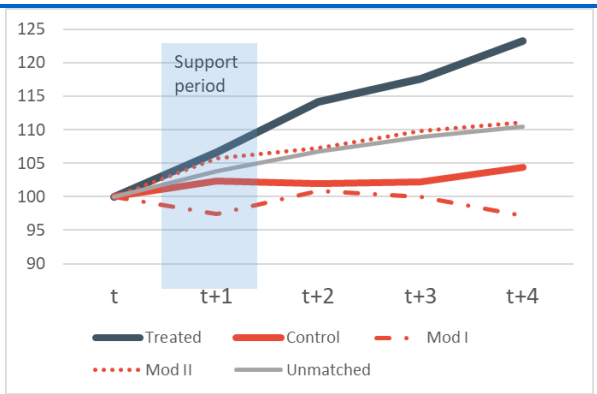
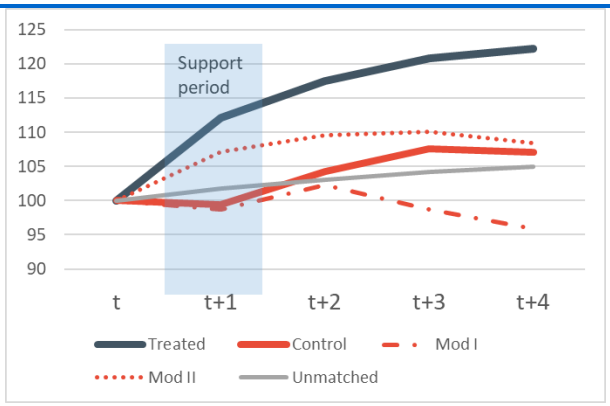
16. The additionality analysis looked at employment changes across the enterprise that the plant was part of, so that any employment changes within the wider group would be taken into account. The enterprise level employment is similar to that seen in the plant level. However, in the final year of the graphs there is a slight acceleration in employment growth at the plant level not seen across the enterprise in which the reporting unit is positioned.

Figure 2.1: RGF Project supported businesses compared to comparators

Employment at enterprise level considers the change across whole businesses. Remembering that the matching is at reporting unit level, this then is an estimate for a wider set of establishments linked to the plant supported with RGF projects.

One feature to highlight is that the pre-support growth in employment is found differ between the control group and supported. This suggests the matching has provided comparator businesses that were on a somewhat different, around 5% growth



trajectory difference to the supported before RGF support.	
Employment at reporting unit level indicates the employment seen at the establishment level. The preferred model (control group) grows somewhat slower than one of the alternative models but faster than the other model. However, employment growth in the supported reporting units rises steeply throughout the period, with a slight pick up at the end of the period, also seen in the preferred counterfactual. There are 185 businesses in both these groups.	
The **gross value added** at the business level available for many of the supported reporting units, but not all. As GVA is assessed using a survey, and small and medium sized businesses will only periodically be sampled, so the GVA is imputed for businesses on reporting unit employment to fill gaps.	

Note: Employment at reporting unit level indicates the employment seen at the establishment level. The preferred model grows somewhat slower than one of the alternative models but faster than the other model.

17. The figure also tracks gross value added in supported businesses. This measure is derived from an ONS survey, called the Annual Business Survey, and so coverage is partial and intermittent. A fair proportion of businesses respond to the survey at least twice and then interpolation has been used to derive overall growth patterns. The value added in supported reporting units tracks employment and this is the case for the counterfactuals also. However, statistical tests are not as robust given the sample sizes are quite modest.

Earnings Effects

Data

18. To analyse earnings effects of RGF support, the study draws on the Annual Survey of Hours and Earnings (ASHE). Each year, ONS surveys businesses about the pay, hours, occupation, age and gender of one percent of employees. The ASHE design tracks individuals, as the same one percent are surveyed, with individuals that have moved jobs being surveyed in their new employer's return. This is because – working with HMRC – the ONS has sampled using National Insurance numbers and ensuring that the same numbers, and so individuals, are selected each year. ASHE is particularly valuable because of the scale of the survey meaning that

samples are large, even when focusing on RGF supported businesses. The main variable of interest is gross weekly earnings. This has been adjusted for inflation using the GDP deflator.

19. Given that surveys are completed by employers from payroll information, the data are deemed to be of high quality. Crucially, this makes them also linkable to enterprise reference numbers and the specific workplace. Linking RGF supported businesses to ASHE by enterprise reference and postcode yields a sample of employees that were employed at RGF supported plants. As corporate ownership of plants may change over time, care was taken to track the same plants over time. As it is possible to identify supported plants, supported plants or units were compared to other units within an enterprise that were not directly supported.

Methodology

20. To understand the earnings effect of RGF support, the data is analysed in several different ways. Earnings growth at supported and unsupported businesses around the time of support start is reviewed, tracking the same employees that stayed with the business over time. Any positive effect on productivity due to support may result in higher wages for employees at supported plants. Tracking the same employees over time ensures that the estimates are not affect by employees that were newly hired as a result of the support.

21. On the other hand, earnings of newly hired employees at supported firms are also reviewed. This part of the analysis aims at determining the value of jobs created by the RGF. Evidently, some of those moves may also be related to replacing previous employees who left an organisation, and are not direct results of the RGF. Still by comparing earnings of employees before and after starting employment at an RGF supported businesses, it is possible to estimate the effect on earnings while controlling for employee-specific unobservable factors such as specialist skills and experience.

22. Job changes are identified by changes in the enterprise reference of an employee, or, where workers stay with the same employer, changes in the postcode. The focus is on employees who moved from unsupported to supported firms and units and vice versa, any time after the start of support. An enterprise reference for an employee might change due to a job change and in the event of a merger or takeover. To exclude these cases, all instances where more than 10 employees moved from one specific enterprise reference to another in a given year, or, where more than half of ASHE employees moved to another specific enterprise reference, are excluded from this part of the analysis.

Results for Regional Projects

23. Businesses supported through RGF Regional Projects pay substantially higher wages than non-supported businesses. At the time of treatment start,

earnings growth in supported businesses is higher than in other businesses. Employees that took up a new job in supported businesses enjoyed a wage premium; when employees leave a supported business, their earnings tend to decrease.

24. Table 2.1 summarises the earnings data. Employees in project beneficiaries are categorised as "supported" starting from the year the business started receiving RGF support and every year thereafter (unless they leave the business). Employees at supported businesses earn more than the wider employee population. This is further boosted by higher overtime pay. Supported businesses also have a high proportion of fulltime staff. Additionally, a very low proportion of employees is female (14% in supported units and 21% in the wider supported business). This is likely to be due to many supported businesses being in manufacturing.

Table 2.1: Earnings data summary statistics for projects

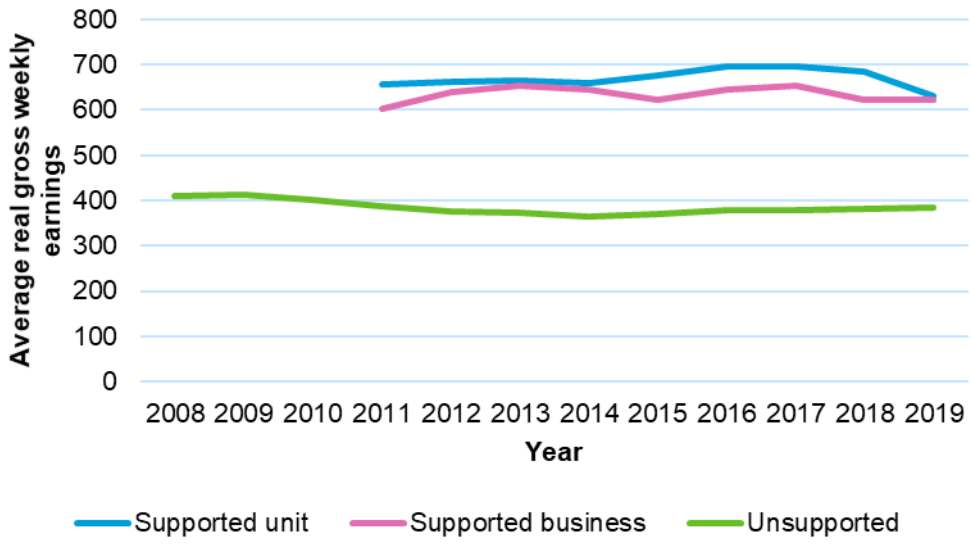
	Supported unit		**Supported business**		**Wider ASHE**	
	Mean	SD	Mean	SD	Mean	SD
Basic weekly pay (real)	626	310	618	330	455	379
Weekly overtime pay (real)	52	116	34	95	14	85
Gross weekly earnings (real)	743	356	715	421	490	423
Total weekly hours	39.7	6.2	38.7	7.1	33.3	11.1
Weekly overtime hours	2.4	5.3	1.9	5.0	1.1	3.5
Age	42.4	11.7	42.5	11.9	40.7	12.8
Female	0.1	0.4	0.2	0.4	0.5	0.5
Full-time	1.0	0.2	0.9	0.2	0.7	0.5
Public sector employer	0	0	0	0	0.3	0.4
Observations	5,509		6,672		2,022,060	

25. Figure 2.2 plots average earnings in businesses from the start of the RGF project. Weekly earnings are considerably higher at supported businesses. Moreover, the earnings seem to have recovered faster from the financial crisis. While average earnings in the wider ASHE fell between 2009 and 2013 and stayed flat thereafter, earnings growth picked up again in supported units from 2013. This is not the case at the supported businesses outside the supported unit.

26. However, the fact of higher earnings cannot be attributed to RGF support since the supported businesses are very different from the wider business community. Rather, it shows that supported businesses operate in activities with higher value-added, higher productivity, and a more skilled workforce than the average UK business. It then suggests that the additional jobs created are high quality. A question that arises then is whether – had the employment not been

created – the individuals would merely have received a high quality, comparable job elsewhere.

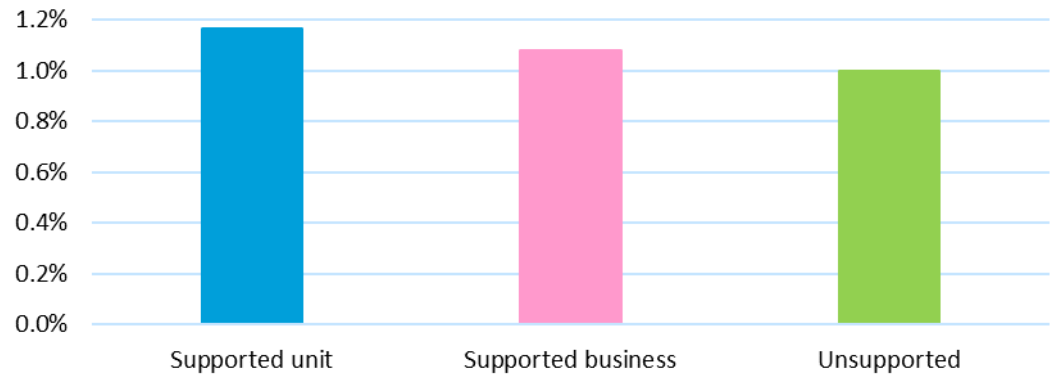
Figure 2.2: Average earnings in RGF Regional Project supported businesses



Note: Averages were calculated in logs and then exponentiated to reduce the impact of exceptionally high earnings

27. Figure 2.3 analyses earnings growth around the time of the start of the RGF Regional Projects. These figures only include individuals continuously employed by the same business between consecutive years, so they are not affected by businesses' hiring and firing decision. Earnings of employees at non-supported businesses grew by 1% annually. Note that this only includes workers continuously employed at the same firm for two consecutive years. At supported units, earnings growth was close to 1.2% from the year before support start to the year of support start. At supported businesses outside the supported unit, earnings grew by 1.1%.

Figure 2.3: Earnings growth around the time of support start

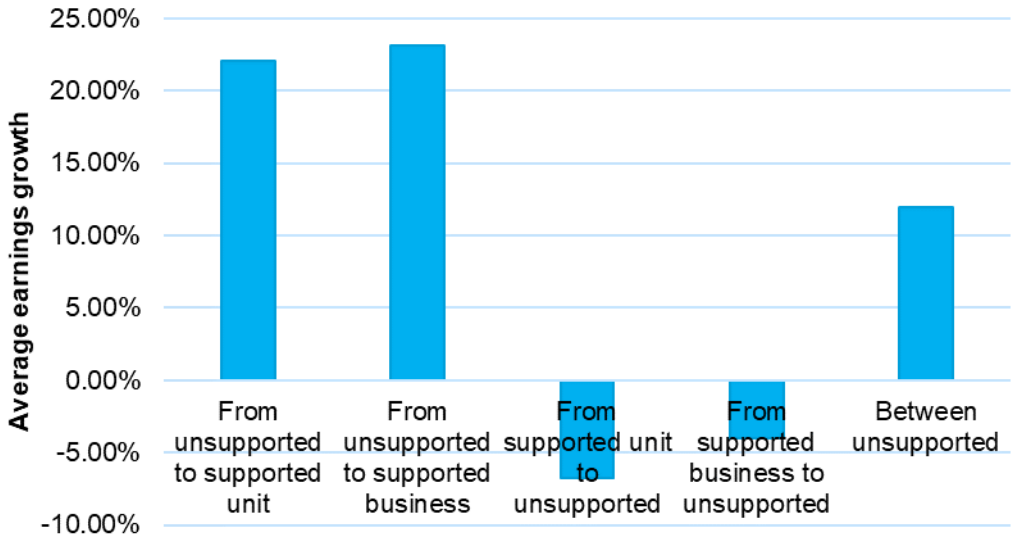


28. An alternative way to investigate whether individuals that take up the additional jobs are benefitting from higher pay that they otherwise would not have received is to exploit the panel structure of the ASHE data. The next figure looks at the wage effect of job switching to or from a supported business. This is a prominent technique when analysing ASHE, as it allows to control for individual characteristics, that are otherwise difficult to observe in data, for example a qualification or an entrepreneurial ability (D'Costa & Overman, 2014; Gibbons et al., 2014).

29. Figure 2.4 compares earnings of job switchers to and from RGF Regional Project supported units and wider businesses to earnings of employees moving between other businesses and those who do not change jobs. Switchers to and from RGF Regional Project supported businesses are considered if the switch occurred in the year of first support by the RGF or any year thereafter.

30. The figure shows a large premium for changing jobs to a business unit that is supported by an RGF Regional Project. Individuals get on average a 22% boost to their earnings when moving to a supported unit. At around 23%, the premium is even slightly higher when moving to a part of a business that has not been supported directly. In contrast, employees earn on average almost 7% less when moving away from a supported unit. The effect of moving jobs from somewhere else in a supported business is smaller, with an earnings loss of only 4%. Any individual moving jobs between unsupported businesses in the wider ASHE experienced an increase in earnings of roughly 12%. The table below the chart provides more details on these findings. The earnings growth figures are quite volatile with high standard deviation.

Figure 2.4: Earnings growth of job changers



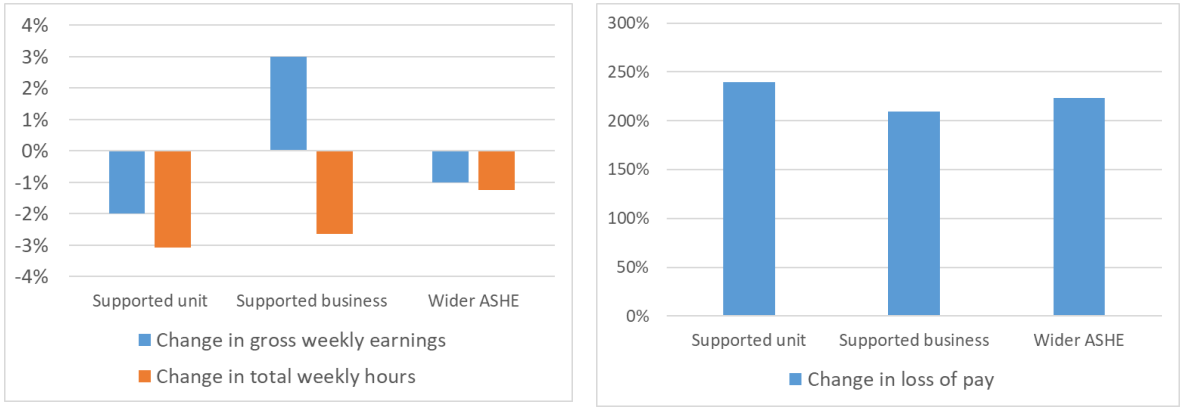
	Earnings growth	SD	Number of observations
From unsupported to supported unit	22.05%	0.41	151
From unsupported to supported business	23.15%	0.49	177
From supported unit to unsupported	-6.72%	0.56	75
From supported business to unsupported	-4.02%	0.56	136
Between unsupported	11.96%	0.63	74486

Initial results on effects from the Covid-19 pandemic

31. As ASHE is conducted in April each year, the 2020 survey captures the labour market at the beginning of the first lockdown caused by the Covid-19 pandemic in the UK. Comparing 2020 to 2019 results on earnings and hours worked gives some initial indications of the impacts of the lockdown. Crucially, ASHE also records a marker for workers whose pay was lower due to illness or furlough.

32. Figure 2.5 shows the effects at businesses supported by national projects. Both earnings and hours fell at supported units, however, a larger extent in hours suggests businesses absorbed some of the impact on their employees. In contrast, when looking at the whole business, hours fell while earnings actually increased. This may be related to changes in the work force, where lower earning employees were more likely to be laid off. The evidence also suggests that businesses made use of furlough, with the share of employees experiencing loss of pay increasing more than three-fold.

Figure 2.5: Covid-19 lockdown effect on businesses supported by regional projects



Impacts beyond Employment and Earnings

33. The previous results have focused on modelling using the ONS Business Structure Database and employment levels in reporting units. Other financial performance indicators of supported businesses were analysed. The sample sizes for this analysis are small – whereas the BSD is a census of all significant businesses – since the ARD is a sample and analysis focuses on the RGF beneficiaries that are surveyed. Also, the number of years since treatment is likely to be insufficient to see productivity impacts: there may be lags between the investments made by businesses and their effects on production, products and real outputs.

34. However, the ARD goes beyond the BSD's focus on turnover and employment. Each year, for the largest businesses, the value added is collected, businesses report their expenditures on staff, purchases of materials and services and investment in different assets. The dataset is at a detailed level, collecting information regarding large multi-establishment businesses economic activity within an individual plant or groups of establishments, with ONS judging an appropriate level of detail that is not overly burdensome.

35. Propensity score modelling was again used to identify a control group using only the respondents in the ARD. Further, to increase the sample size, an average was taken across three years prior to treatment. As businesses will typically not be surveyed by ONS every year, this increases the overlap between project beneficiaries and ARD considerably.

36. A comparison group was identified, and Table 2.2 presents the change in a range of variables for RGF project beneficiaries in comparison with the matched control group. The analysis focuses on 127 supported plants that are found in the ARD, comparing with matched unsupported plants in the ARD.

Table 2.2: Impacts beyond Employment in RGF Project Supported Businesses

Variable	Unit	Impact estimates	
		Effect	Significance
Employment	Log growth	10%	At 10%
Turnover	Log growth	2-15%	No
Gross value added	£'000	£13,354	Sometimes
Remuneration	Log growth	19%	At 5%
Purchases	Log growth	20%	Sometimes
Capital Expenditure	Log growth	40%	No
Observations	Plants	127	

37. The effects of the RGF support on employment growth are consistent with the results seen in the BSD analysis and Figure 2.1. The supported plants have employment growth that is about 10% faster than that of comparable plants. The growth rates are higher than the earlier analysis since the focus here is the individual supported establishment, compared to the previous growth estimates' focus on whole enterprises. This means that the strong growth seen in supported plants would have been combined with that seen in a wider set of establishments perhaps experiencing modest growth.

38. There is also evidence consistent with this employment growth in employee remuneration growth in the RGF beneficiaries. The total wage bill has risen about 19% faster in supported plants than comparable businesses. Pay is a proxy for labour productivity, and – when complemented by the significant growth in employment in the supported businesses – suggests that the job creation following support results in labour moving towards more productive businesses. The compositional effect will be positive, with in aggregate there being an increased number of well-paid, productive jobs.

39. While it is possible to discern higher GVA, purchases and capital expenditure in supported businesses, these performance indicators generally have a high variance. Statistical tests are often insignificant unless sample sizes are high. There are estimation issues with the ARD, especially the limited sample size of observations in this analysis.

Case Studies

40. The econometric analysis of Regional Projects was complemented by case studies to contextualise the findings on employment, turnover, productivity and wage premia, and to indicate other benefits both in the supported businesses and beyond in supply chains or collaborators. Fifteen projects were selected to be representative of sectors and regions and ten interviews were conducted. The case studies comprised of large-scale capital projects. Three broad themes emerged across the Regional Projects: building or refurbishing a production plant; research and development (R&D), often involving investment into a facility, or investing directly in a process or product development.

41. Projects had delivered their intended activities and outputs. Many were then on track to deliver outcomes and impacts – the investment and private sector leverage along with the contracted jobs. This included the projects that had comprised substantial capital investment, sometimes entailing clearing and preparing brownfield land to construct the new plant.

42. The findings presented cover the reasoning and identified needs underlying the RGF bid. As projects were implemented the initial goals and aims tended to develop and sometimes expand in scope. The firm-level employment, turnover and productivity impacts expected and generated are discussed. Through R&D focused projects, several businesses were able to improve their manufacturing practices. Finally, wider impacts on local communities and supply chains are covered.

Project Logic

43. Interviews indicated a strong focus on competitiveness and productivity gains amongst beneficiaries. The investments also helped break into new markets to render the business more profitable in the long-term. The case studies suggested that the rationale behind applying for RGF was also correlated with the size and structure of the firm.

44. Where beneficiaries were subsidiaries of larger multinational firms the projects tended to be motivated by a focus on securing future production in the UK. The aim was to avoid activity moving abroad and so safeguarding local jobs. RGF support meant the UK-based plants had stronger cases to make to global company boards for investing in projects and jobs in the UK, helping to offset the additional costs associated with producing in the UK rather than in other cheaper locations and to bridge the gap between investment and delivering return on investment. Interviewees sometimes commented that alternative locations being considered were in countries where government support was common.

> *"The RGF helped to level the playing field in developing the business case for UK production"*

45. For smaller, UK-based beneficiaries without the option to relocate activity abroad, the RGF was considered as a source for funding critical investments into plant and research. These investments were made to increase production capabilities and enhance global competitiveness going forward. The funding accelerated work and de-risked investment in research. For example, smaller companies engaged in research and patenting used the funding to support the renewal of patents in multiple countries.

46. Across the case studies the investments had been used to make necessary improvements to sustain production and service delivery, such as allowing a business to meet required standards, regulation to keep products on the market and providing critical infrastructure investment to keep premises in operation.

Employment Impacts

47. Interviews discussed how the jobs safeguarded and created were estimated as applications were developed. Expected employment impacts were modelled comparing expected project outputs against the baseline and most likely alternatives. As the rationale for applying was often to build a business case to remain within the UK, a large part of the jobs reported were jobs safeguarded through avoidance of plant closure and relocation.

"Our ability to operate these plants successfully is very dependent on having highly skilled people; these are high end specialist and technical roles. … if you lose that talent you lose that corporate knowledge, and it can have a material impact on your reliability and your production performance"

48. Having an RGF commitment sometimes meant jobs were safeguarded as a result of the contractual obligations. For example, a business when faced with the closure of a major customer identified the obligation to meet the agreed job targets as a factor and found solutions that kept the employees within the organisation. It also ensured that the planned investment went ahead, with long term benefits as new contracts could be secured.

49. The creation of new jobs was estimated based on assumed additional production and research capabilities going forward with higher degrees of automation linked to the upgrades and productivity improvement taken into consideration. Since models were based on current operations, beneficiaries also had a good understanding of the type of jobs they would be creating as they built up engineering and technical capacity. This is reflected in the MI analysis and econometric analysis, which both found that job projections have been met and exceeded.

50. The wage premium found in the ASHE analysis was substantiated by case study findings on employer demand for skills and specialist knowledge for high end manufacturing and research. The forecast jobs were highly skilled, with ongoing R&D requiring a pipeline of skilled engineers, scientists, and experts in fields, such as metallurgy. Attracting specialist personnel and retaining skill within the company was highlighted as key benefits of the projects and the improved working environment in the new facilities was perceived as making it easier to recruit specialist engineers.

> *"having a facility like this is a real attractor for talent. We do a lot of work with universities, and careers fairs like that … it becomes a place where people would like to work"*

51. Furthermore, plant and equipment upgrades need to be supported by staff trained to operate them and a key impact noted was training staff to use the new assets. This knowledge was stressed as a key asset, especially due to acquiring individuals with appropriate skill levels being difficult to find and recruit.

Turnover and Productivity

52. Although case study projects were at varying stages of completion, interviewees considered that there had been substantial impacts emerging to date in terms of capacity, productivity, cost competitiveness, attracting new customers and longer-term abilities to secure funding and projects in the future. In one case, the R&D project had already translated into a doubling of sales and the investment was starting to generate a return.

53. In the cases of plant refurbishments, the investments also brought changed operating models, enhanced facilities and processes, enabled new forms of work as well as the use of new materials and processes. Opportunities were taken to design improved working spaces with benefits such as reduced travel time within the plant. An opportunity was taken to co-ordinate a new facility with a parallel energy investment to build in energy use improvements. There were then substantial efficiency gains, with purpose-built labs, pilot plants, streamlined production lines and increased production capacity. One case study would be moving from one shift production to two shifts, and another estimated the average labour cost in the new plant to be around half of that in the old factory.

54. The RGF support was highlighted as key to make the size and scope of investment possible, overcoming prior limitations of size and capability. Without the added investment, one interviewee noted, "we might not have been as brave as we were", and in the long term it was the volume and additional floorspace that made the difference. Others stressed the timeliness of the investment, and the opportunity to catalyse development at a critical time. Because the new facilities supported greater growth and growth potential, pipelines of work and future projects could be built around the additional capability secured.

55. Some projects are facing less favourable markets than expected, and all additional capacity has not been utilised to date as a result. The investments were noted as timely, and the resulting size and scale of the facilities – which are cutting edge – promising. However, some interviewees did feel that application processes could be improved by allowing for more time to develop proposals. Businesses reflecting on what future funding streams might look like, observed that the tight timescales for putting an application into the RGF processes may have precluded projects where – for example – a package of related, complementary interventions were explored.

> *"We clearly have the best facility in our market space, nothing of the same scale anywhere in Europe"*

56. Going forward, beneficiaries continue to compare and benchmark their production against competitors and group members, identifying gaps and opportunities. The projects have been a learning experience and delivering the projects had resulted in the development of more robust project milestones, collaboration across teams and interrogation of marginal costs.

Wider Impacts

57. Locally, the projects and RGF funding that went into them were also considered as "vote of confidence" in the locality, and good relationships with the Local Authorities had aided planning processes and preparation. The buy-in and support from local government and stakeholders was noted as beneficial and the concrete support of Local Authorities were in two cases highlighted. One beneficiary also commented on the work with the LEP, which had been important in identifying funding opportunities and understand the bidding process. The close work with the LEP at the inception stage had also prompted them to think about wider impacts and their supply chains. It was noted in one case that the process of construction and development in the UK was significantly more burdensome than in other countries where the beneficiary had plants, such as Germany. The planning processes, and the number of professions that needed to be engaged was viewed as more extensive, and not necessarily contributing to delivery.

58. Most beneficiaries consulted believed there had been, and would continue to be, a positive impact of the project on local and sectoral supply chains. The businesses generally occupy large sites and are key local employers, both directly through staffing and indirectly through purchase of local services, such as cleaning and logistics. They make use of a broad range of sectors, and the facilities operated require extensive support, employing equipment suppliers and specialist engineering services as well as cleaning and general upkeep.

59. Although beneficiaries use local supply chains, and expressed an interest hiring local talent, the availability of skills was noted as challenges in the interviews. Interviewees stressed the importance of retaining talent and had put in place

apprentice and graduate schemes. Being able to recruit apprentices and graduates into these roles was considered as a chance to develop “homegrown talent”.

60. The lack of some of the production inputs was also noted, and one project considered that they had to import a lot of the high value supplies that go into their production since UK is a high-cost location, limiting the prospects for vertical integration.

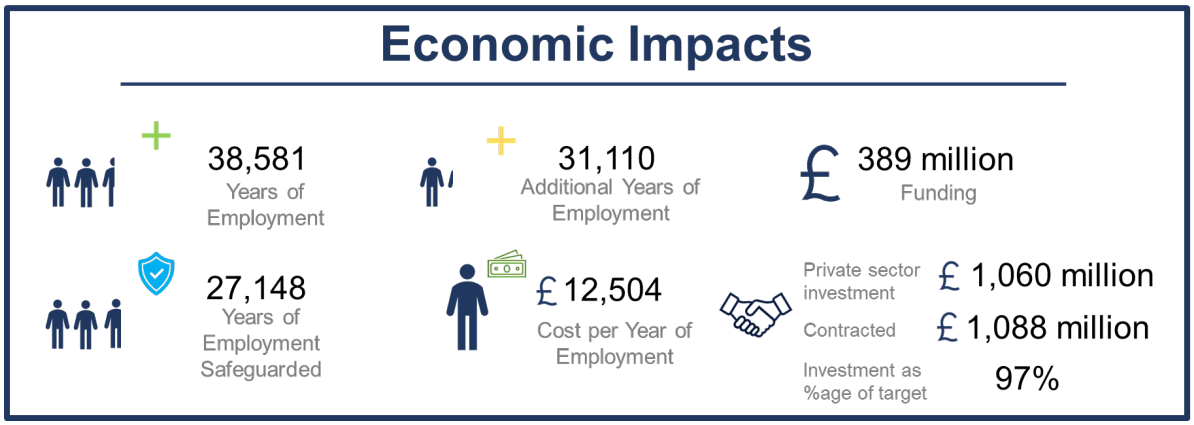
> *“HR is imperative … [to] get engineers in, and technicians, and then train and train”*

61. Wider impacts were also observed where projects resulted in patents which could be licenced to other manufacturers. In one case study, the research output had been licensed to twelve other companies subject to the demands of one of the major customers to avoid monopoly. There were also cases of work with local universities around the Research and Development and partnerships around recruitment. Where beneficiaries used research funded mechanisms to progress research projects with universities and partners it was believed that benefits would be diffused across partners, or “multiplied”.

62. The technical knowledge developed through the projects was also stressed as a benefit that will build a base going forward. Further, new materials and applications were continued to be explored after project end, although through other means. This ranged from ongoing maintenance of capital assets to targeted research funded projects working with universities and industry partners.

63. Where investments were made in transport infrastructure (for instance: a port), wider impacts were also linked to neighbouring areas and economies benefiting from the improvements in transport activities. This brought anticipated downstream impacts on logistics firms as imports coming through the harbour needed to be moved onwards.

3 Place-Based Programmes: Scheme 2



This chapter describes the economic and wider impacts of Place-Based Programmes. It presents findings on employment, and wider economic impacts from analysis using spatial and firm-level data, alongside headline findings from depth case studies.

The new jobs in the areas that contain an RGF Place-Based Programme are estimated using firm-level data. However, many of the jobs created were from businesses relocating and so not new. Further, analysis looks at the job growth seen in comparable areas. Interviews conducted in 16 case studies highlight the impacts are expected to accrue over a longer period.

Findings

- The first place-based programme began in financial year 2011 and the last, began in financial year 2016 so this analysis uses 2020 as the last year due to it being four years post treatment. Most programmes were between financial year 2013-2015.

- Place-based programmes are interventions with area-based and spatial elements. Transport and commercial infrastructure schemes make up the majority of these, most of which are focused on 'unlocking' development sites which are otherwise unviable. The transport infrastructure programmes funded tend to be of a smaller scale and have primarily supported the release of employment sites for development. Similarly, funded improvements in flood defences may unlock new development sites that would otherwise be unviable due to risk of flooding.

- Recognising the complexity of impacts and the potential for geographical spillovers, a mixed methods approach was applied to this scheme. This approach integrated spatial analysis using firm-level data with case studies to assess economic and wider impacts and corroborate the evidence surrounding job

creation and displacement. Most programmes are intended to stimulate additional direct and indirect jobs in the targeted areas and further afield. This could lead to positive spillovers or clustering effects as well as potential displacement.

- The number of additional jobs created attributable to the area-based interventions is 31,110. The employment in supported places rises by 38,581. The net inflow of jobs to supported areas is 20,548 but many of these jobs have relocated from other areas and so are not additional.

- The total cost of the interventions is £389 million, implying a cost per job of £12,504.

- Areas within 1km of place-based RGF support experienced faster employment growth than comparable locations elsewhere in England. Analysis also suggests that employment growth mainly occurs within 1km and had no effect beyond 4km.

- The rates of firm creation and closure between the supported and unsupported areas are very similar suggesting that place-based programmes have little effect on creation or survival of businesses.

- As of 2017, all but two of the case studies demonstrate progress towards meeting the expected impacts, and the investment components of many initiatives are now completed.

- The case studies found that targets for safeguarded jobs and created jobs often had been exceeded. However, much of the funding was drawn down during financial years 2012/13 and 2013/14 and so the case studies had only just completed the funded programmes.

Econometric Analysis

1. The economic outcomes are estimated using the Business Structure Database (BSD) from September 2010 to September 2019, identifying the lower layer super output areas (LSOA) with an RGF Place-Based Programmes based on the postcode recorded in the monitoring information. Neighbouring and proximate LSOAs are then used to compare developments and assess impact.

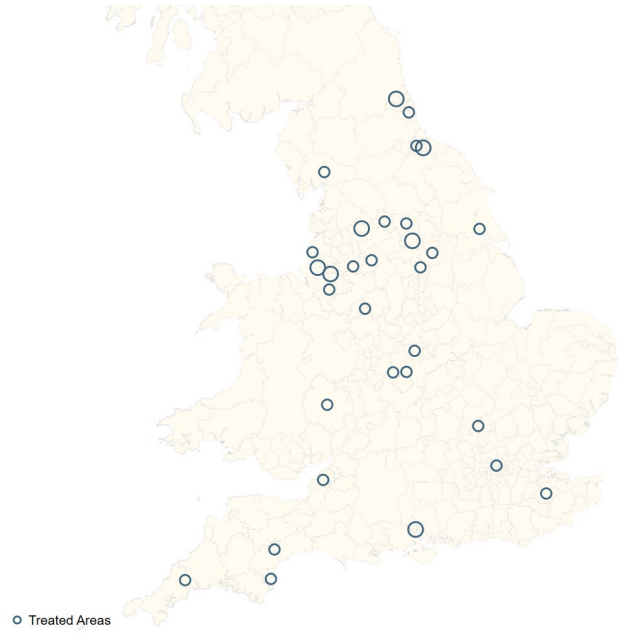
2. Some of the positive economic effects of area-based interventions may also be driven by displacement from neighbouring areas/regions. In other words, net growth at the wider regional level will be less if the growth witnessed in the supported area comes at the detriment of other neighbouring areas. As a result, net inflow of businesses into the areas supported by the RGF is also examined.

3. However, in many cases it is the aim of place-based interventions to attract and concentrate formerly geographically dispersed businesses into one area. The economic rationale for concentrating businesses in one area is to create additional

productivity through so-called “agglomeration effects”. Certain kinds of relocation may therefore be desirable, even more so if it involves encouraging growth in more deprived areas.

4. Figure 3.1 illustrates the geographical spread of the RGF sponsored area-based interventions across England. The larger circles present a higher concentration of projects. The postcode areas of Tees Valley and Liverpool benefitted from the highest concentration of interventions. Liverpool received three distinct types of interventions: investments in port infrastructure, housing and commercial developments.

Figure 3.1: Location of Area-Based Interventions



5. At the time of the interim evaluation, Place-Based Programmes comprised 38 distinct area-based interventions representing roughly £389m of RGF funding. Of these Programmes the evaluation sampled 16 case studies covering a total grant value of £230m (Table 3.1). Supported areas have a higher proportion of disadvantaged people as they have the lowest proportion of economically active residents and the highest proportion of young and long-term unemployed people.

Table 3.1: Evaluation Coverage

Count	Grant	Econometric Analysis*	Case Studies
39	£389m	38 programmes (100%)	16 programmes (43%)
		£389 Grant Funding (100%)	£230 Grant Funding (60%)

Note: Coverage is presented as percentage of grant allocated. Note that the spatial econometric analysis covered all (39, grant £389m) area based interventions in scope for evaluation. One Round 3 programme has since been designated as a place-based intervention.*

Employment Impacts

6. In line with recent work on evaluations of area-based interventions the effects of the policy are compared with firms in supported areas at varying distances. The number of additional jobs created shows net creation attributable to the area-based interventions is 10,370 implying a cost per additional job of £37,512. This finding is similar to the results from Gibbons et al. (2017) who use a similar methodology on the Single Regeneration Budget to estimate a cost per job of £39,675 and Budget and Mayer et al. (2012), who estimate the cost per relocated job of up to 31,450 euros for the Zones Franches Urbaies (ZFU) policy.

7. The evaluation found evidence that the policy has resulted in the relocation of establishments and plants and created additional employment compared to neighbouring LSOAs. Table 3.2 presents an assessment of the economic impact of the Place-Based Programmes in terms of employment creation to date. It considers deadweight and displacement to come to an estimate of net additional jobs created from the scheme. It shows that the net jobs relocated from outside areas is 18,033 and the upper bound limit of 10,370 jobs can be attributed to the scheme.

Table 3.2: Additionality Calculations

Gross Jobs Created in Supported Areas (A)	38,581 [3]	
Jobs Relocated from Outside Areas (B)	20,548 [4]	
Net Jobs Created in Supported Areas (C: A-B)	18,033	
Net Additional Jobs Created in Supported Areas (C) x two different additionality ratios	Lower bound Estimate: 7,643 [5]	Upper Bound Estimate: 10,370 [6]

64. The analysis did not find any indication of an impact on turnover growth, and the growth in employment has mainly resulted in a decrease of productivity growth compared to all unsupported LSOAs.

65. Finally, the difference in difference analysis comparing growth rates in employment suggest LSOAs close to the RGF supported LSOAs experience faster employment growth than comparable locations elsewhere in England. Comparing growth rates across areas moving away from treated areas suggests that employment growth mainly occurs within 1km and had no effect beyond 5km.

Case Studies

66. The case studies covered several of the larger area-based interventions, including the three largest of the area-based interventions, West of England LEP's Revolving Infrastructure Fund (budgeted £40m), the enabling works of Port of

[3] Data in 2020 gives number of employees at 295,786 in 2020. Dividing this by 1.15 gives 257,205 as the number of employees in September 2010. Therefore, gross jobs is 28,581 (295786-257205).

[4] This number is the net number of businesses relocating into and out of the treatment areas (relocate to treatment – relocate to control) multiplied by the average number of employees for 2020 (amount of employees/ number of establishments). The number includes net employees for both plants and enterprises.

[5] Lower bound estimate is calculated by choosing the additionality ratio of 42.4% (15.1-8.7)/15.1 * 100) estimate from the difference-in-differences analysis in table 7.4 when only control firms within 1km of the supported firms closes neighbouring firms within the supported LSOA.

[6] Upper bound estimate is computed the same way as the lower bound but with an additionality ratio of 56.9% (15.1-6.5/15.1*100) estimated from the difference-in-difference analysis which included control firms in LSOAs from within 4 kilometres to the firms in the supported LSOAs

Liverpool's Post-Panamax Container Terminal (budgeted £35m), and the North Liverpool City Fringe Employment and Investment programme (budgeted £25m). The case studies cover a broad range of spatial programmes ranging from smaller grants of around £1 million through to £40m.

67. Common to all interventions is a focus on the creation of new or safeguarded direct and indirect jobs in supply chains or due to multiplier effects. Where completion reports and other monitoring resources were available these were incorporated into case study findings.

68. In several cases the interventions had only just completed drawdown of funds, and findings relied on early visible outputs. As a result, impacts are expected to accrue over a longer time period and the impact on business and the wider community requires a longer timeframe. The effect on sustainable economic growth is likely to become apparent at a later date. The evidence base available is not yet strong enough to draw any conclusions about differences between projects/programmes in earlier and later rounds.

69. As at 2017 when the final set of interviews were conducted, all but two of the case studies demonstrate progress towards meeting the expected impacts, and the investment components of many initiatives completed. All case studies reviewed in 2015 had been able to demonstrate progress, and in the two cases where issues had been identified these were the result of circumstances that prompted contract variations, which were done in a timely fashion.

70. The research has identified some common themes as perceived by interviewees:

- Most of the case studies focus on infrastructure investments and, by 2017, many of the projects had been completed and were in operation. Activities discussed with interviewees in 2015 were therefore in the process of being translated into economic outcomes.

- Employment impacts are in the form of both safeguarded jobs and created jobs and targets have often been exceeded; the monitoring of impacts varies by programme, but a focus is emerging on direct job creation/safeguarding.

- For some of the large interventions, indirect job creation (i.e. in supply chains or in businesses proximate to an intervention) is projected to be larger than direct job creation, but there remain difficulties in measuring these impacts as there is no source listing the businesses that will be affected.

- Also, for some industries supported job creation may not be the prime outcome, as business growth may depend on sustained competitiveness and innovation which may include automation and reduction of overheads.

- Many projects and programmes that were experiencing delays in 2015, or at risk of delays, have since been able to return to timelines.

- Confidence building and aspiration raising were reported as significant benefits to the local economy in a number of cases.

- Other important benefits include improvements to the public realm, amenity and 'sustainable' transport, and also ecological benefits in some cases.

- Most interviewees were very clear that RGF funding had led to additional activity, and most initiatives would not have been possible without RGF funding as it provided a catalyst to release other funds.

- Some initiatives would have gone ahead without the additional funding, although potentially on a smaller scale, to a lower standard, or significantly later.

- Some businesses beneficiaries stated that the RGF projects and programmes were critical for their growth.

71. Central government intended the RGF to be a means to develop lagging regional economies. This has balanced short term job creation/safeguarding and longer-term ambitions to change local and regional economies in areas. A range of factors need to be assessed beyond the number of jobs created or safeguarded, such as the quality of jobs, the displacement of jobs elsewhere and other social and environmental impacts of the RGF investments. Long term evaluations over five or ten-year periods will be able to assess the wider economic, social and environmental impacts of the series of investments.

Table 3.3: Case Study Summaries

Project Summary	Headline Findings
Birmingham Council: Road scheme to divert the A45 to enable a runway extension at Birmingham airport, West Midlands, Grant: £15.7m Diverting the A45 dual carriageway road allows Birmingham Airport to expand its runway. Travel to and from local major employment sites such as the National Exhibition Centre and Jaguar Land Rover at Solihull and Birmingham Business Park would also be enhanced. The diversion and runway extension will stimulate economic growth, with the increased connectivity to the airport attracting private sector investment and creating jobs.	- Created 31 new jobs targeting unemployed people from the local area and safeguarded 27 jobs. - By 2017, the extended runway has resulted in the airport attracting new operators and their long-haul flights to Birmingham. - Project has helped create and safeguard jobs in the wider area. Examples of spill over effects include Virgin's move to the nearby Eagle Business Park, partially attributed to RGF funding by Birmingham council. - To mitigate negative environmental effects and externalities the scheme improved cycle routes in the area, extended operating hours of local bus services extended, planted new trees and green areas, and implemented noise-insulation schemes. An annual £500,000 invested in community trust for community projects. - Interviewees noted a continued focus in infrastructure investment and closer collaboration between Birmingham and Solihull local authorities, e.g. HS2 sited nearby, setting up the Urban Growth Company.
Bradford – City Centre Delivery Group: Growing new jobs in Bradford City Centre, Yorkshire and the Humber, £17.6m The RGF project develops the previously stalled Broadway retail centre which opened in late 2015. The funding aimed to encourage businesses to locate in the city centre and increase the diversity of businesses, hence stimulating the private sector economy. This was expected to result in more jobs along with increased footfall and spending in the city centre. Businesses benefitted from two schemes, a business rate rebate scheme and a capital grant scheme.	- As of June 2017, 652 jobs created through the project to create the City Centre Growth Zone. - Businesses reported higher turnover and profitability, and the freeing up of existing staff to focus upon future growth opportunities. - Some grant recipients created apprenticeships, with an emphasis on opportunities for local young people. - The Broadway development maximised opportunities for local businesses by sourcing from local supply chains. - The project attracted sizable private sector co-investment, almost ten times the RGF award, from Westfield, the developers of the Broadway shopping centre. The job-creation targets are 2,264 jobs by 2021, of which 1,764 relate to the operation of the Broadway development. - The project is widely reported to have helped raise Bradford's profile. There have been public realm improvements, including a city park.
Burnley Council: Aerospace Supply Chain Logistics Park, North West, £1.4m The overall programme, costing £7.5 million, has created an aerospace logistic park adjacent to the	- The programme has met its target spend and exceeded job creation target. There were 80 total jobs created contracted over the programme's lifetime, against which 130 have been achieved, overachieving the initial target by 50 jobs.

Aircelle plant in Burnley, which is intended to help strengthen the local supply chains in the aerospace and advanced energy sectors. The programme was anticipated to raise skill levels and generate jobs in the local economy. The Aerospace Supply Park has, since the initial proposal, been rebranded as Innovation Drive.	- The programme has unlocked brownfield land to provide premises and growth opportunities for local businesses employing skilled labour. - The scheme has taken a broader purview than the initial focus of the business park to support suitable businesses that did not or could not relocate to the business park. The initial focus on logistics has been changed in favour of an industrial cluster, although the development of a 'hub' for businesses to share knowledge and resources was noted as an aspect that needed further work.
Burnley Council, Todmorden Curve and Weaver's Triangle, North West, £8.8m Burnley borough council obtained RGF support towards infrastructure improvements and setting up a local University Technical College. Though the rail improvement and infrastructure developments have been completed according to plan the problems faced getting the University Technical College off the ground have resulted in a major contract variation which was under way 2017. The changes meant fieldwork was only conducted in 2015; an alternative RGF funded project managed by the council was chosen for 2017.	- By 2015 61 direct jobs had been created or safeguarded, from an overall RGF target of 176. - These direct jobs are associated with the construction work that has taken place on the Weavers' Triangle, the staff employed in delivering the new University Technical College, and rail operating staff recruited and trained in advance of the new train service rolling out in May 2015. - Improvements were made to local pedestrian spaces, highways and other public spaces, as well as renovation of previously rundown historic buildings. The scheme made it easier to market the town by local businesses. - Local businesses in the construction and services supply chains report improved levels of activity resulting from the Weavers' Triangle investment. The new, faster rail service to Manchester enabled by the Todmorden Curve was expected to reduce travel times and help to alleviate congestion, making Burnley more attractive to employers and commuters alike.
Daresbury SIC LLP: Destination Sci tech Daresbury, North West, £7.4m The project invested in infrastructure and new workspace at Sci-Tech Daresbury, a science park centred around the Daresbury research laboratory in Cheshire. The project upgraded the power supply to Sci-Tech Daresbury and constructed office and scientific lab space for use by high-tech businesses. The primary objectives were to generate new collaborative approaches in science and technology to deliver greater economic impacts across the UK and international inward investment.	- Of the 681 direct jobs attributed to this project, 642 are safeguarded and 39 created. These jobs are mainly in higher-skill categories. RGF work has focused on improvements seen as necessary to retain businesses on the Sci-Tech Daresbury campus and which might have otherwise moved elsewhere. - Safeguarding of jobs has come about through improvements to the campus facilities, such as the upgrading of the power supply. The improved transport links were also considered a factor in retaining businesses and likely to lead to an increase in the number of local people who work on the campus. - Only a small number of employees are living locally. Findings from the transport survey in 2015 showed that 3% of employees live within 3 miles of the campus, 16% within 3-5 miles, 50% between 5-20 miles and 30% more than 20 miles. - Feedback from some business tenants on the Sci-Tech Daresbury campus indicates that the campus has been instrumental to their growth.
Hinckley & Bosworth Borough Council, MIRA Technology Park (MTP), East Midlands, £17.7m The project entails public infrastructure improvement works to help unlock the potential of the new Enterprise Zone at MIRA Technology Park (MTP) near Nuneaton	- As at April 2015 the programme was on track to deliver contracted outputs, and by 2017, with 79 direct jobs created, 60 jobs safeguarded, and 217 indirect jobs created, all targets had been exceeded.

and increase the attractiveness of MTP as a competitive high-tech R&D facility. The target is to create 91 direct jobs connected with the project and to create or safeguard 354 indirect jobs over the five-year project monitoring period.	- The RGF supported infrastructure improvements were judged by interviewees to have been crucial to enabling the development of MTP, with some 10 to 15 large companies having moved onto the park since they began. - Wider public benefits include reduced congestion and safety of the adjacent road network and also the introduction of new local bus services, cycle routes and footpaths.
Leeds City Council: Phase 1 Leeds Flood Alleviation Scheme, Yorkshire and the Humber £3.47m The project invests in flood prevention seen as key to promoting investor confidence and unlocking the regeneration and development potential of the waterfront and adjacent land south of Leeds city centre. A primary focus is to afford flood protection to 500 city centre businesses, 3,000 residential properties and key infrastructure.	- 184 direct jobs created exceeding target to directly create 150 construction jobs. 22,000 jobs are predicted to be safeguarded over the next 10 years. - Businesses carrying out the construction work have benefited through safeguarded jobs and recruitment of new staff, additional apprenticeships and improved turnover. These businesses also reported a benefit in terms of learning, leading to an improvement of their capabilities. - There are benefits in terms of ecological diversity, improved public space, including attractive public realm areas for people to visit and work. Ecological benefits include fish passes built into two new weirs, contributing to efforts to attract trout, salmon and other fish back into the River Aire. - The scheme has won several awards reflecting that it has been well-managed and delivered within a tight timescale for such a complex project.
Luton Borough Council: M1 Junction 10A Improvement, East of England, £24.8 The aim is to address problems of traffic congestion associated with M1 Junction 10a, particularly at peak travel times. The delays had been negatively impacting the potential for local businesses to expand, with Highways England objections preventing new business planning applications. The project was expected to create 900 direct jobs over a five-year period.	- By 2015 over 800 new jobs had been attributed to the project. In 2017, the figure has risen to 1,351. - Further direct job-creation is expected to come from sites that are 'unlocked' for development. The release of this land is dependent upon this scheme alleviating the traffic congestion in the area. Northern Shell has already moved their offices from London to Luton as a result of this work. - The scheme is also expected to create 6,750 indirect jobs associated with the scheme's expected broader benefits, some of which are already being delivered. - Luton Airport has received permission to expand, possibly resulting in up to another 8m passengers using the airport per year. This expansion was dependent on resolving traffic issues related to Junction 10A.
Newcastle Science City: Economic Growth and jobs on Science Central, North East, £6m Development of a former derelict brownfield site in the city of Newcastle upon Tyne for a state-of-the-art science development where University scientists will work alongside businesses to create spin-out forms and attract new investment into the area. It is estimated to create over 4,000 jobs, 500,000 sq.ft of office space and 450 new homes over 15 years, spanning 24 acres of	- The project is on track to exceed the job creation targets to create an average of 46 new direct jobs (between 2014 and 2017), safeguard an average of 114 direct jobs (between 2013 and2017), and create an average of 271 indirect direct jobs (between 2013 and 2018). - Newcastle city council used a "Targeted Recruitment and Training" clause to target benefits toy those who are unemployed and living in Newcastle's most disadvantaged wards. - The Framework Training and Employment Management Plan resulted in the all planning applications submitted for each development on NSC requiring targets related to the impact on local jobs and training at the construction and end user stages. Other targets:

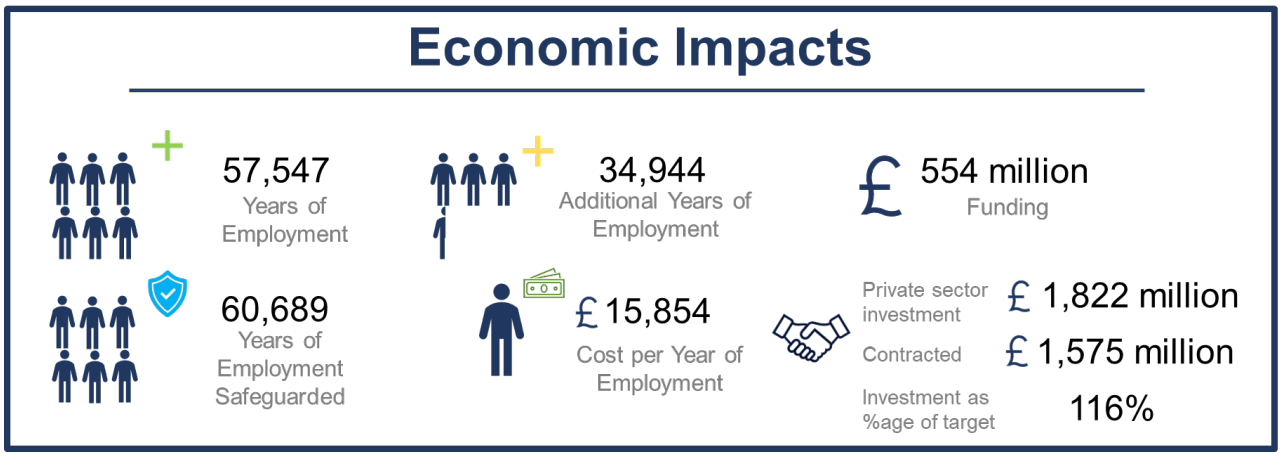
prime city-centre development land in the city's Accelerated Development Zone.	- 213 training weeks for out of work Newcastle residents (including apprentices, trainees and individuals employed on site or work experience). - Every vacancy associated with the development (including vacancies within the contractor Sir Robert McAlpine and their subcontractors) were notified to NCC at least 7 days before recruitment from other sources. - The contractor, Sir Robert McAlpine, delivered a total of 215 weeks, exceeding the target and delivered the following outputs: 7 jobs including 2 apprenticeships; 2 graduate placements; and 7 paid placements for 16-18 year olds part of a Construction Pathway programme developed with Sir Robert McAlpine (ibid).
North Liverpool City Fringe Employment and Investment Programme, North West, £25.3m The North Liverpool City Fringe Programme (NLCFP) is a multifaceted programme aiming to redevelop a key area on the Liverpool Waterfront, parts of which have been derelict for decades. It broadens out the considerable development that has taken place in Liverpool city centre over the past decade to include an area which remains relatively deprived	- Approximately 727 direct jobs have been created so far, from an overall target of 799 over the course of the programme, which runs to 2019. - The direct jobs created in an up-market hotel, restaurant and conferencing facility created as part of this scheme have been largely taken by local people. Employees have been provided with training and development opportunities. The jobs created in the redevelopment of the former tobacco warehouse at Stanley Dock have also mainly been taken by local construction workers. - £3m has been spent improving the main road arteries leading to North Liverpool, including better junctions, road-widening, construction of cycle paths, and a much-improved pedestrian experience resulting from improved lighting, landscaping and paths. These improvement works are largely complete. - Some of the individuals benefitting from employment opportunities as part of this RGF programme describe a positive effect on their lives. Many of those employed by Glendale Liverpool to landscape the area leading to the new hotel were previously at the margins of the job market, in some cases never having previously had a job.
Mersey Docks and Harbour Company: Port of Liverpool Post-Panamax Container Terminal Programme, North West, £35m The river-dredging enabling works are to deepen a channel which provides access to the Port of Liverpool and the River Mersey more broadly. The channel is some 6 miles long, deepened to 8 metres, thereby allowing the largest Post-Panamax container vessels to enter the river and dock at the Port of Liverpool and designed to facilitate the construction by Peel Ports of the 'Liverpool2' Post-Panamax container terminal. The target was for 408 direct jobs to be created in relatively highly-skilled roles such as crane operators.	- 470 posts have been filled in addition to dredging and construction jobs. - Broader benefits are modelled, with a study estimating the creation of around 10,000 indirect jobs because of the extra warehousing and transportation required as businesses switch their custom from southern ports to Liverpool. - Stanlow Oil Refinery is set to receive an annual $1m (£640,000) cost saving from the dredging scheme as it will no longer have to pay suppliers 'deadfreight' for bringing below capacity oil tankers to the oil refinery at Tranmere. - There is a benefit to Liverpool Cruise Terminal in terms of a wider 'window of opportunity' for cruise ships to enter and leave the port due to the deeper channel resulting from the dredge. Due to the channel dredging, there are fewer restrictions on timing of movement, making Liverpool more attractive as a cruise destination.

South Devon College: Capital investment for development of a new 'Energy Centre', South West, £1.2m South Devon College's new regional 'Energy Centre' forms a hub for stimulating 'sustainable growth' activities among local businesses within the energy sector. Specific activities are aimed at stimulating demand and economic growth through: the promotion of the benefits of renewable energy technologies to SME's and increasing awareness in local communities; providing training to upskill and reskill local businesses, encouraging diversification; and to offer facilities to support start-ups in the renewables sector to meet the increasing demand. The Energy Centre was expected to result in 407 directly-created, full-time jobs, along with 250 internships.	- By 2015, 34 had been created or safeguarded so far with most of these at NVQ4 skill level. - Jobs created include new lecturer positions; business and community engagement officers; an individual trained by the college who has since attained full-time employment; and employment associated with start-up companies working in the incubation space that was also created as part of this programme. - The Energy Centre is perceived as having accelerated the development and growth of companies offering innovative renewable-energy technologies. - The Energy Centre's activities have helped reduce inefficiencies and costs in various ways. The Centre offers accredited training in designing and installing renewable technologies where previously there was little local provision. Businesses operating in this sector therefore benefit from training provided at a lower cost. - The installation of renewable technologies by the businesses located at the centre is already helping to reduce local businesses' operating costs. Other benefits identified include raising public awareness of renewable technologies.
Southampton City Council: Southampton Docks: Platform for Prosperity, South East, £10.9m Southampton city council (SCC) used RGF funding to improve access roads leading to the Eastern Docks in Southampton. The previous road network was unable to accommodate recent economic growth driven by the Port of Southampton. The transport infrastructure improvements were intended to ease current traffic congestion, supporting the growth of the port and local/regional economy, protecting and creating new private sector jobs in the process. The project is expected to create 2,239 jobs in total over a ten-year period to 2020-21, some of which are temporary.	- The annual expected job creation that makes up this overall target is expected to peak at 368 in 2020-21. In early 2015, 472 jobs had been created. - Balfour Beatty, the lead contractor, has taken on approximately 25 to 40 people to carry out the work associated with this intervention. - The cruise-ship operator Carnival UK report an 18% increase in their locally-based employment since the programme's commencement, amounting to some 200 additional employees in various roles and at various skill levels. - The improvements to the local transport network have encouraged the cruise-ship operator Royal Caribbean to send larger ships to the port. Both Royal Caribbean and Carnival UK expect the RGF supported transport-network improvements to reduce their fuel costs and improve customer satisfaction, since their customers travel to and from the port via the local road network. - The cruise-terminal operator ABP has invested £12m in the refurbishment of two cruise terminals in the Western Docks, Southampton Port, in addition to extending a multi-deck car facility in the Eastern Docks.
Sunderland City Council: Sunderland City Deal Infrastructure Development, North East, £7.1	- The project is expected to deliver an average of 735 jobs created/safeguarded a year, peaking at 1,060 jobs in 2018-19. - It is anticipated that the project will be a catalyst for over £28m of private sector investment over eight years. Feedback from key stakeholders indicates that investment enquiries from businesses are already coming through as a result of the RGF intervention. The jobs associated with these subsequent

Sunderland city council with South Tyneside council, used RGF funding to improve transport infrastructure, with the objective of creating the conditions to enable business growth, particularly in advanced manufacturing and engineering. The project aimed to make improvements to the transport network to support business growth, and the development of the North East Local Enterprise Partnership's Enterprise Zone, expecting to increase the opportunities for private sector investment and to support and accelerate economic growth in the area.	investments are expected to be sourced locally, with Sunderland city council's Business Investment Team working with businesses to recruit and then train local labour to an appropriate skill level. - An immediate and direct benefit of this RGF programme has been the reduction of traffic as a result of that part of the project focused on junction improvements and the development of a cycle network. A prominent, local employer - the car manufacturer Nissan - already reports a reduction of congestion.
Wakefield City Council: Wakefield Council's regeneration of four housing sites, Yorkshire and the Humber, £9.4m Wakefield Council benefited from an RGF grant to catalyse the regeneration of five housing sites around Wakefield. The money has been spent cleaning up sites earmarked for residential use and to provide critical infrastructure and public realm improvements to stimulate developer interest and private sector investment. The project developed five housing sites and was completed in 2018 ahead of the initial 2019 deadline, with benefits for the local community: in creating sustainable communities with homes that are affordable and healthy to live in.	- Benefits include the creation or safeguarding of 36 direct jobs and the creation of 22 additional apprenticeships. Indirect job-creation has occurred in the form of jobs created or safeguarded by developers and contractors carrying out the redevelopment work. - Wider benefits were expected include the sourcing of material locally, implying a positive effect on local supply chains. There has been significant interest in the new properties, indicating that the developments will assist in addressing local housing demands, and adjacent sites are being unlocked for development. - As a result of the level of interest, the size of one development increased its annual rate of production for 2015 from 36 units to 73 units. - Interviewees in the council delivering the programme expect to see a long-term boost to the local economy resulting from the spending by families in the developed properties.
West of England LEP: Revolving Infrastructure Fund, South West, £39.8m The Revolving Infrastructure Fund (RIF) is a programme to invest the RGF funds into particular 'enabling infrastructure' projects across the West of England LEP area. Once RIF projects are underway, developers are expected to pay back the funding received to the LEP, supporting a 'revolving' fund. The programme targeted the creation or safeguarding of 10,719 direct jobs by 2014 and 53,549 by 2031. Because of the delays to the	- To date, 616 jobs have been created or safeguarded, against a revised 2014/15 target of 500, although most of these are safeguarded rather than newly created. - The developer of the Weston Gateway Business Park reports that the construction work has so far resulted in the creation of 479 jobs, implying a significant benefit to this business. They anticipate that the scheme will create up to 1,800 jobs over its life-cycle. - Knightstone Housing Association reported improved productivity levels because several offices from several locations are now being consolidated into a single office on the new business park. Knightstone estimate savings of £2m per annum, which they are reinvesting.

programme, the target has been revised to 10,719 jobs by 2019.	- The Housing Association's move to the business park is reported to be having a positive effect on local suppliers, including a local catering company that has doubled in size since having won a contract to supply the Housing Association.

4 National Programmes: Scheme 3



This chapter presents estimates of the impacts of the third scheme type, National Programmes, using results from an econometric analysis of ONS administrative data and a survey of the businesses benefitting from RGF support. National Programmes involved RGF supporting intermediaries to provide support to businesses, usually SMEs or start-ups.

Lists of supported businesses and unsuccessful applicants have been collected from the Programmes. One National Programme – Lancaster University-led Growth Hub Wave 2 – was studied using a case study approach.

The chapter first assesses employment, growth and survival using firm-level data. It then presents the results from the beneficiary survey conducted amongst beneficiary businesses.

Findings

- 34,944 additional job years were created in supported businesses four years after start of support, with a third of businesses reporting that they employed individuals who were not in employment, education or training and almost all jobs being fulltime and permanent.
- Businesses receiving support 2012 through 2014 were more likely to survive than the matched control group. This translated into 236 additional jobs saved through survival.
- Supported businesses were generally small and in manufacturing; they mostly invested RGF funds into plant and machinery or property.

- Supported businesses have seen a growth in sales. The growth experienced was greater than that of comparable businesses, and the difference was statistically significant.
- Beneficiaries surveyed reported on a range of wider benefits. The most common wider benefit cited by end beneficiaries was in making the business become more efficient, and two-thirds of end beneficiaries reported that RGF had supported them in developing new products or services.

Econometric Analysis

1. National Programmes are primarily asset finance and similar schemes, where banks and intermediary lenders distribute loans to business beneficiaries, the end beneficiaries, supporting access to finance for smaller businesses that might otherwise struggle to secure funding.

2. Since the interventions support smaller businesses through intermediaries, lists of beneficiaries and unsuccessful applicants were collected from the intermediaries. The lists were then be linked to the employment, turnover and other firm-level data held in the ONS Secure Research Service. They were also used to conduct surveys, results presented in the next section.

3. The econometric analysis estimates impact in terms of employment, turnover and productivity of the National Programmes in financial years following receipt of support. Business beneficiaries were supported 2012-2015 and impact measures looked at growth four years after treatment. The timeframe was chosen to balance the need for longer term impacts and the recognised difficulty of controlling for confounding factors when trajectories are longer.

4. Firms in the sample receiving support are slightly larger, in terms of employees than the national average and have, on average, higher turnover and are likely to be marginally older. They are also more likely to have received other non-RGF support and be in manufacturing. Comparing beneficiaries to unsuccessful applicants reveal that firms successfully applying for programme support are smaller than unsuccessful applicants in terms of employees and turnover most years, but slightly less likely to have received other forms of non-RGF support.

5. A control group of businesses that is statistically similar to the supported businesses is used to establish whether RGF support has additional impacts over and above what would have happened without support. To estimate the additional impact, the control group – unlike the Regional Projects – is selected from the unsuccessful applicants. Tests of the matching suggest this provides a good counterfactual. The matching processes seek to find unsupported businesses similar to the beneficiaries and, even before using matching, the unsuccessful programme applicants are similar in terms

of the observable characteristics. Furthermore, unlike the projects, there is a large pool of unsuccessful applicants from which to draw comparable businesses, sufficiently large to find matches for all beneficiaries.

6. Businesses supported by National Programmes experience increases in employment over the period. These are greater than all comparison groups, matched or unmatched. The largest differential in impact is seen in models that use the wider BSD without any matching. Having matched to businesses in the wider BSD, the difference between RGF beneficiaries and the control group is high and significant but reduced. The difference reduces, but remains statistically significant, as the control group is changed to include more information about non-beneficiaries' behaviour in making use of business support. Matching to comparable businesses in the unsuccessful applicants however increases the gap between the supported and unsupported businesses.

7. There is insignificant difference in productivity growth between supported businesses and those in comparable unsupported businesses. The productivity measure is real turnover per employee, and therefore reflects the observation that the additional real turnover growth seen in supported businesses has been matched by the growth in employment.

8. Businesses benefiting from this type of support are, like programme beneficiaries in general, more like the general population of businesses than is the case for Regional Projects. Since programme applicants tend to be smaller businesses, they are more likely to close. Firm closure has an employment impact as jobs are lost if businesses fold. Comparing beneficiaries receiving support in 2012 through 2014 with matched unsuccessful applicants showed a differential rate of exit of between 3% and 8%. In total this translated into 236 job years saved.

9. Consequently, this implies that a few of the additional jobs are due to a survival premium that supported businesses attract for National Programmes. This may be because support is more recent than for Regional Programmes and differential survival rates are yet to be observed. It may also be because the nature of the support – a repayable loan is more common than a grant – meet investment needs of older businesses less likely to be facing the prospect of closing.

Employment Impacts

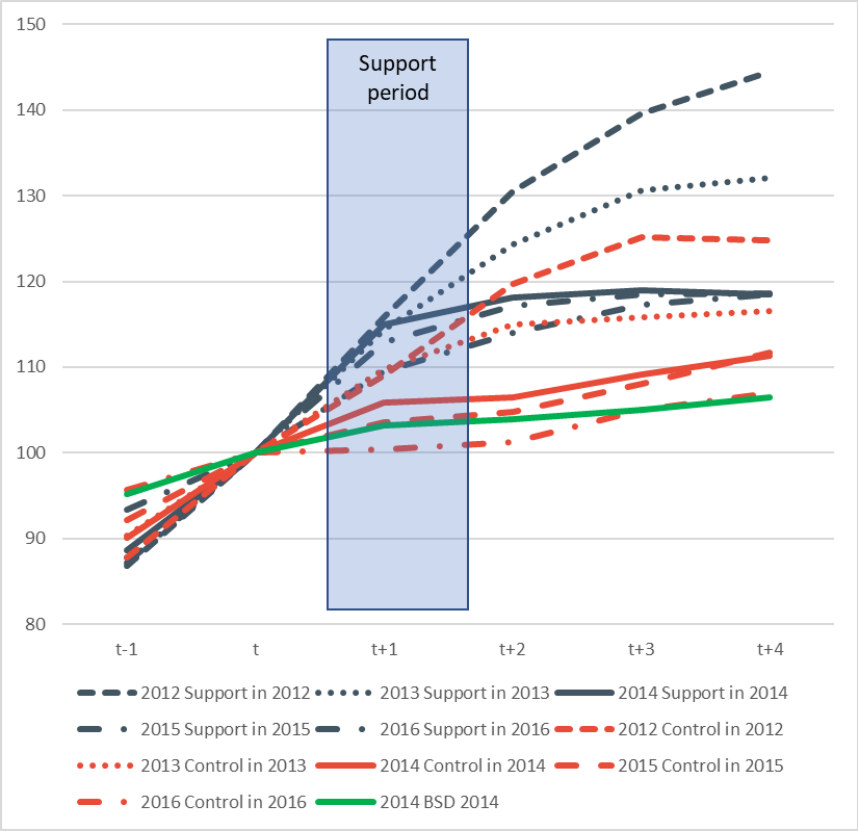
10. As for Regional Projects and Regional Programmes, employment impacts are estimated by assessing the number of jobs created in the supported businesses and the extent to which these are additional through comparison with corresponding counterfactuals, respectively.

11. Four years after support, before adjusting for the employment changes seen in comparable unsupported businesses, over 57,000 job years were created in the 3,810 beneficiaries in gross terms. As a result, approximately 34,944 additional years of

employment had been created. The job creation over the period was statistically significant and translated into around 15 gross and 9 additional job years per supported business.

12. Figure 4.1 illustrates the growth trajectory for five cohorts – from 2012 to 2016 – of National Programme beneficiaries in blue and highlights the middle cohort in using a solid line for those supported in 2014 (i.e. financial year 2014/2015). The following figure 4.1 compares beneficiary employment growth with growth observed in a control group derived using the propensity score matching approach. Each cohort has a matched group tracked over four years. The 2014 cohort is in bold dark blue, and the matched control is red.

Figure 4.1: Employment index National Programme Beneficiaries and Comparator Groups



Note: Indexed job growth for cohorts of National Programme beneficiaries and matched control groups – derived from Model II. Matched control groups are derived from the PSM procedure, unmatched illustrate the growth trajectory of the entire match pool without any matching in 2014.

13. The average growth rate in 749 businesses that successfully applied for RGF funds through National Programmes in the 2014 (financial year) is 18% over the period. In the other periods – indicated by various dashed lines – it is noticeable that early cohorts have higher employment growth. While businesses supported in 2014, 2015 and 2016 all have four-year employment growth of 6% in the later years, 11-15% in the three earliest cohorts. The figure also indicates in green the four-year growth in employment seen in the wider business population, as recorded in the BSD, after 2014. This is 6%, a figure similar to

employment growth seen in earlier and later windows as UK employment growth was relatively stable over the period).

14. The figure highlights that supported businesses out-perform comparable businesses. The growth seen after support is between 7% and 20% greater for the businesses supported in Scheme 3 National Programmes. Also, it indicates that matching may have been quite successful, in that the pre-support growth in employment observed in the counterfactuals (t-1) are quite close to the pre-support growth in the supported businesses.

15. Comparing the job creation across the cohorts shows some evidence that impact increases with time and is not in the year immediately after support. Looking at growth rates across cohorts as of September 2015, effects in the 2012 cohort are roughly one and a half times the 2014 beneficiary cohort. In the earlier cohorts, more of the beneficiaries would have completed their RGF-funded expansion. Interestingly, the more recent cohorts of support are – in their first years – showing slightly higher additional growth than the earlier cohorts, something that can be explored further as more years of data become available.

16. This lag between treatment and impact means that it takes time for employment impacts to mature. The businesses supported in 2012 generated the highest number of job years per business over the four-year period following support (36 gross additional, and up to 12 net additional). This is the result of beneficiaries in the 2012 cohort having implemented their projects at an earlier date, and job years therefore having had more time to accumulate.

Earnings impacts and the quality of jobs

17. The quality of RGF jobs is assessed through analysing whether there is a wage premium for jobs in supported businesses. This is estimated using results on individual employees from the Annual Survey of Hours and Earnings (ASHE). As with the projects, the ASHE responses for supported businesses provides details about wages. Further, this is available for the jobs in unsuccessful applicants, which can serve as a comparison group to the jobs in applicants that received support (in the RGF Regional Projects analysis, the comparator were jobs in other unsupported plants owned by the supported businesses).

18. Table 4.1 summarises the earnings data. Employees are categorised as in supported businesses for the year the business receives RGF Regional Programme support, and in every year thereafter (unless they leave the business).

19. Earnings impacts and the quality of jobs Figure 4.2 plots average earnings at businesses from the start of their support. The National Programmes differ from the Regional Projects (chapter 2) and Regional Programmes (Chapter 5) in that there was no sustained wage premium in beneficiaries compared to unsuccessful applicants following support.

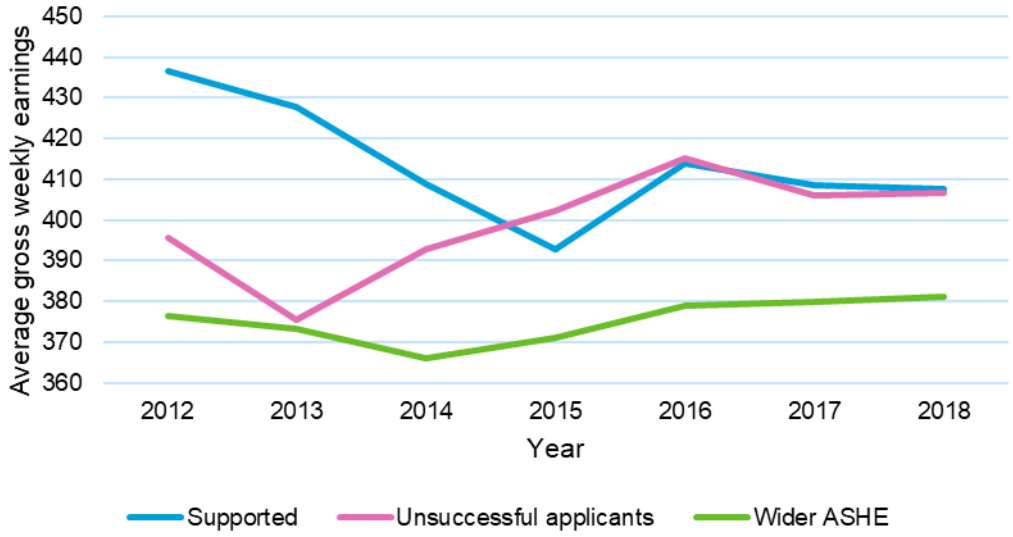
20. Average earnings at supported businesses were much higher than both those in unsuccessful applicants and the wider ASHE population in the first programme cohorts (in 2012). The premium over unsuccessful applicants however is not maintained in beneficiaries after 2012, and there is no evidence that beneficiary jobs were any different in quality to jobs in the unsuccessful applicants, though both groups have wages above the average in the wider ASHE population.

Table 4.1: Earnings data summary statistics for National Programmes

	Beneficiary unit S3		Beneficiary business S3		Applicant unit		Applicant business		Wider ASHE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Basic weekly pay (real)	424	225	497	251	437	290	464	291	456	380
Weekly overtime pay	33	87	33	81	22	57	26	70	14	77
Gross weekly earnings (real)	472	258	580	289	482	313	512	329	492	425
Total weekly hours	38.6	10.5	39.1	9.2	36.4	10.4	37.9	11.0	33.2	11.1
Weekly overtime hours	2.1	5.0	2.1	5.0	1.7	4.1	1.8	4.9	1.1	3.5
Age	41.8	13.4	41.5	12.3	39.5	12.8	40.4	12.6	40.7	12.8
Full-time	0.9	0.4	0.9	0.3	0.8	0.4	0.8	0.4	0.7	0.5
Public sector employer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
Observations	3314		2505		3011		3948		1994799	

21. This is suggestive of change in the composition of supported businesses over time. It is also indicative – as noted for Regional Projects – that it is difficult to ascribe quality impacts to RGF interventions; rather is probably more due to supported businesses and the unsuccessful applicants operating in activities with higher value-added, higher productivity, and a more skilled workforce than the average UK business.

Figure 4.2: Average earnings in RGF National Programme supported businesses

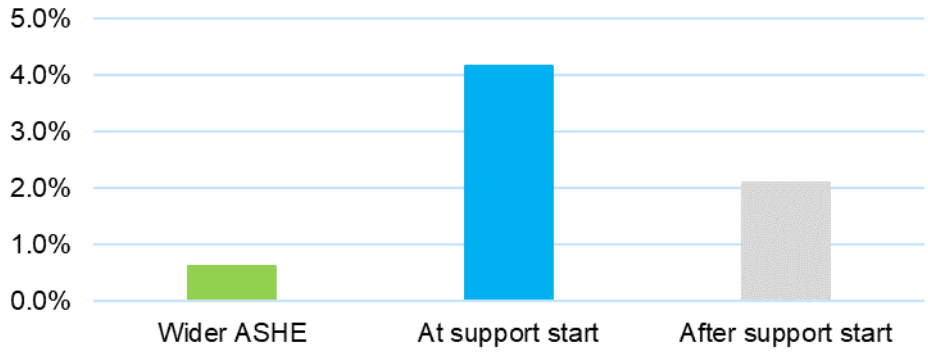


Note: Averages were calculated in logs and then exponentiated to reduce the impact of exceptionally high earnings.

22. As with previous analysis, looking beyond the level of wages might help to determine the quality of RGF jobs. To consider this issue further, Figure 4.3 considers the changes in wages seen in supported businesses, looking at earnings growth around the time of the start of the RGF National Programmes. These figures only include individuals continuously employed by the same business, so they are not affected by businesses' hiring and firing decision.

23. Earnings of employees at businesses in the wider ASHE grew by 0.6% annually. At supported units, earnings growth was over 4% from the year before support start to the year of support start. After the start of the support, earnings continued to grow at an average of around 2% annually.

Figure 4.3: Earnings growth around the time of National Programme Support Start

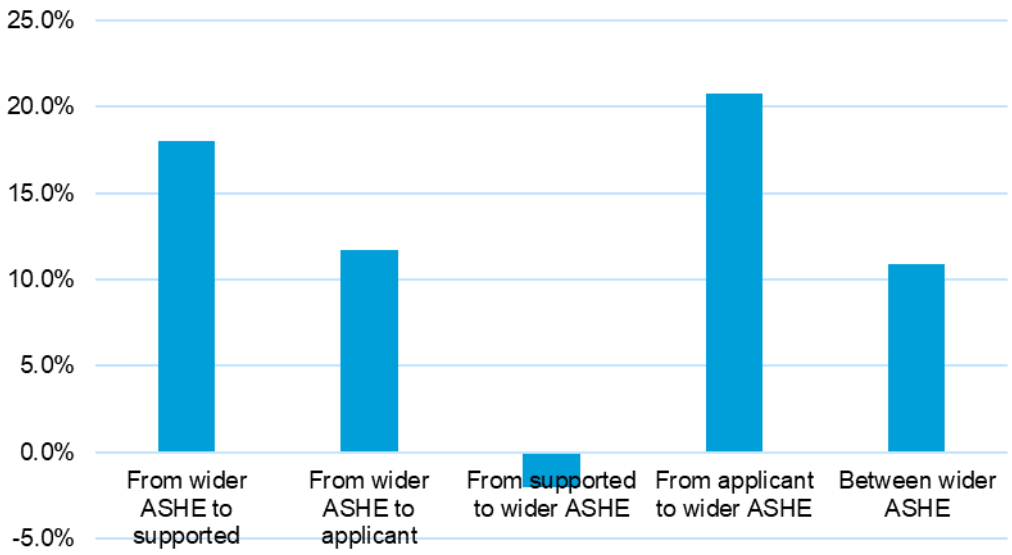


24. The panel structure of the ASHE data can provide another way to understand RGF jobs, as tracking the same person over time controls for that individual's characteristics, that are otherwise difficult to observe in data, for example qualifications or an entrepreneurial ability (D'Costa & Overman, 2014; Gibbons et al., 2014).

25. Figure 4.4 compares earnings of job switchers to and from an RGF National Programme beneficiary business to the earnings of employees moving between unsuccessful applicants, as well as businesses in the wider ASHE. Switchers to and from RGF National Programme supported businesses are considered if the switch occurred in the year of first support by the RGF or any year thereafter. Switchers are examples of employees in a supported business and unsupported, identical in every respect except being a year older.

26. The figure shows a premium of 18% when switching jobs to a supported business. In comparison, the premium is only 12% when moving to an unsuccessful applicant business. Employees who leave a supported business and join a business in the wider ASHE saw their earnings decline by 2% on average. In contrast, employees who left an unsuccessful applicant business to join a business in the wider ASHE experienced an earnings-increase of 20% on average Some pay increase is usual as people change jobs but this high level – employees changing jobs between businesses in the wider ASHE gained an earnings-increase of 11% - is suggesting a high productivity rise linked to these individuals moving.

Figure 4.4: Earnings growth of job changers



	Earnings growth	SD	Number of observations
From wider ASHE to supported	18.0%	0.59	184
From wider ASHE to applicant	11.7%	0.63	144
From supported to wider ASHE	-2.0%	0.51	133
From applicant to wider ASHE	20.8%	0.63	146
Between wider ASHE	10.9%	0.61	112733

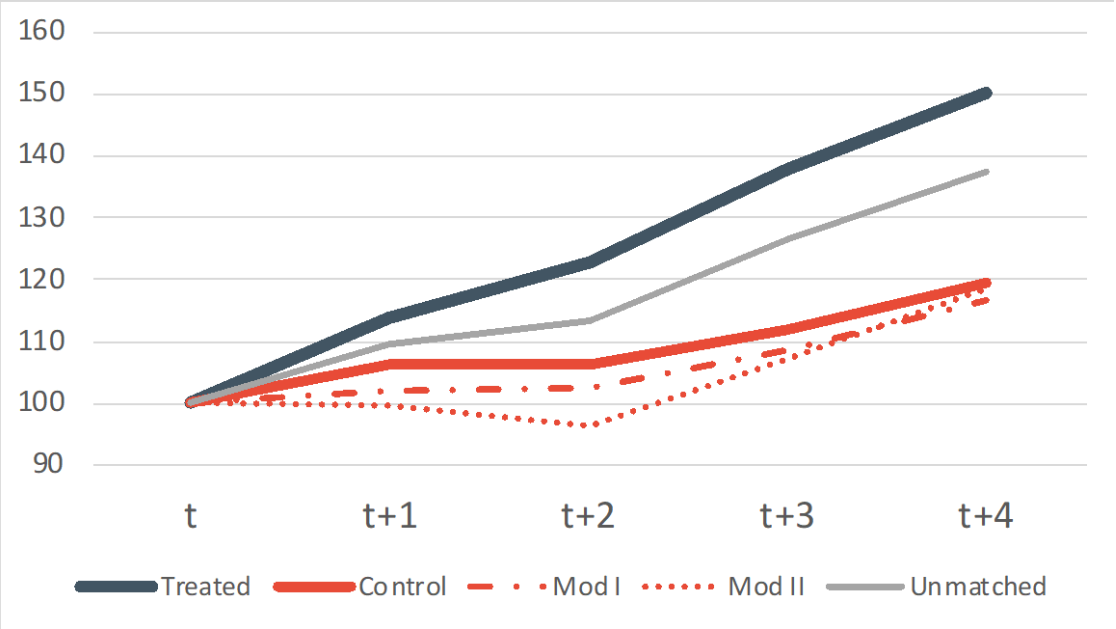
27. The analysis of earnings provides evidence that the employment created through RGF support are in businesses that have well-paid jobs, indicative of quality. The fact that the jobs are better quality suggests that the safeguarded and created jobs would tend to improve productivity, with those switching into the businesses raising their earnings. However, it should be noted that there is evidence that the wage premium is also present in the unsuccessful applicants for RGF support. This suggests that the jobs created are higher quality but that the support has not in itself raised the quality of the jobs.

Turnover and Productivity Impacts

28. Businesses receiving support in 2012-2014 have seen a consistent and steady growth in sales since the RGF, exceeding the performance of both comparator businesses in the wider BSD and unsuccessful applicants. In this first (2012) cohort of support, the level of growth was higher than the overall sample of unsuccessful applicant starting immediately at the year of treatment.

29. This is illustrated in Figure 4.5 below. After 2013, matched unsuccessful applicants were overtaken by firms matched in the wider BSD, while business beneficiaries continued to increase their sales.

Figure 4.5: Real Turnover Index for Beneficiaries (2012) and Comparator Groups



Note: Indexed real turnover growth for 2012 cohort of programme beneficiaries and control groups – derived from Model II. Matched control groups are derived from the PSM procedure, unmatched illustrate the growth trajectory of the entire match pool without any matching. The total growth across the period corresponds to the turnover growth column in Table 15. The growth trajectories correspond to the difference-in-differences estimate in the same table. Each growth trajectory is indexed at its baseline value.

30. The average growth rate among beneficiaries receiving RGF funds through National Programmes in the 2012 (financial year) was 48% over the four-year period following support. Similar to employment, this is consistently higher than the average growth in the matched control groups with matched unsuccessful applicants experiencing slightly low growth rate than the unmatched.

31. For businesses securing funding in subsequent years, the turnover growth was higher than the matched control groups and the difference statistically significant. The significance levels decrease in the later years, reflecting less time for impacts to mature and fewer years in the analysis.

32. The analysis of productivity growth did not yield statistically significant differences between the treated and the control groups and vary markedly across the cohorts. Broadly, sales growth is tracking employment growth. Productivity changes are generally harder to discern because the productivity ratio is more volatile, especially because turnover – the only financial metric that is available for small businesses in the ONS data – is only a proxy for the changes in value added seen in the businesses and can be quite noisy making productivity measures imprecise.

Beneficiary Survey

33. A total of 643 end beneficiaries responded to the survey, representing a response rate of 49% of all contacted sample. Of these, 338 completed the online datasheet providing more detailed information on their business. Surveys were conducted three years after support had been provided. Since only 56 unsuccessful applicants completed the survey their results have been excluded from this analysis.

34. Beneficiaries were most commonly micro or small (45% had 0-9 employees; 43% had 10-49 employees). The majority (57%) were in the Manufacturing sector, with Business and Professional Services (10%) the next most common sector. The geographic profile of end beneficiaries was diverse, and the majority had been trading for over ten years (71%). More than a third of respondents said they export. However, this accounts for a small proportion of sales amongst those who do and 87% considered their main competition to be based in the UK.

35. Investment for specific equipment or machinery was the most common form of support accessed by end beneficiaries (78%), with one in six using the RGF for property purchase or development. Around half of the beneficiaries said that their primary goal in applying to the RGF was to grow their business, while other commonly desired outcomes included improving efficiencies (19%) and increasing the workforce (14%).

Recruitment and Retention

36. 85% of end beneficiaries reported that the number of employees at their site had increased since they first received RGF support. Further, they generally attributed the positive job creation and retention outcomes to the programme. In absolute terms, end beneficiaries reported that the RGF had resulted in the creation of around two jobs on average (the median) at each site, while an average of three existing jobs was also safeguarded as a result; these figures were higher among larger businesses.

37. The majority (83%) of end beneficiaries reported that all of the new jobs were for full-time positions and almost all reported that the new jobs created as a result of the RGF were permanent contracts. Similarly, 89% reported that all of their safeguarded jobs were full-time and 99% reported that all safeguarded jobs were in permanent positions. Typically, roles were available for Level 2 or 3 qualifications, with four in ten participants (40%) having created jobs at this level.

38. Over a third (37%) of end beneficiaries with new jobs had taken on individuals not in education, employment or training (NEET), demonstrating the positive impact the RGF programme has had in helping individuals outside of the labour market into work. A lower proportion (22%) had taken on individuals who were in education prior to securing the job, and seven in ten (69%) had taken on individuals who had been working for another organisation prior to starting with them.

39. Over four in 10 end beneficiaries had vacancies at the time of the survey, with 30% of all end beneficiaries stating that they found their vacancies hard to fill. Asked for the reasons for these hard-to-fill vacancies, a lack of suitable skills in the labour market was the dominating factor (72%), while the next two common reasons mentioned were applicants lacking suitable work experience (17%) and the desired attitude (15%).

Six out of ten (61%) end beneficiaries with hard-to-fill vacancies felt that this had prevented them from fully realising the benefits of the RGF support (although only 8% reported this had occurred 'to a great extent').

Financial Impacts

40. Most end beneficiaries experienced positive financial impacts as a result of the RGF and end beneficiaries tended to attribute these impacts to the RGF support they received. Eight in ten (79%) reported that their turnover was higher for the last complete financial year than it was in the year preceding their RGF support commencing, and 94% reported that the RGF had had a positive impact on turnover.

41. The end beneficiaries that completed the online datasheet provided further detail on the change in turnover they experienced. The median average annual turnover prior to receiving RGF support was £1.46m, and this had increased to £1.76m three years later. Median average annual profit increased from £87,000 to £120,000. With costs of involvement in the programme relatively low (a median of £1,000), this indicates that the financial benefits of RGF support outweighed the cost.

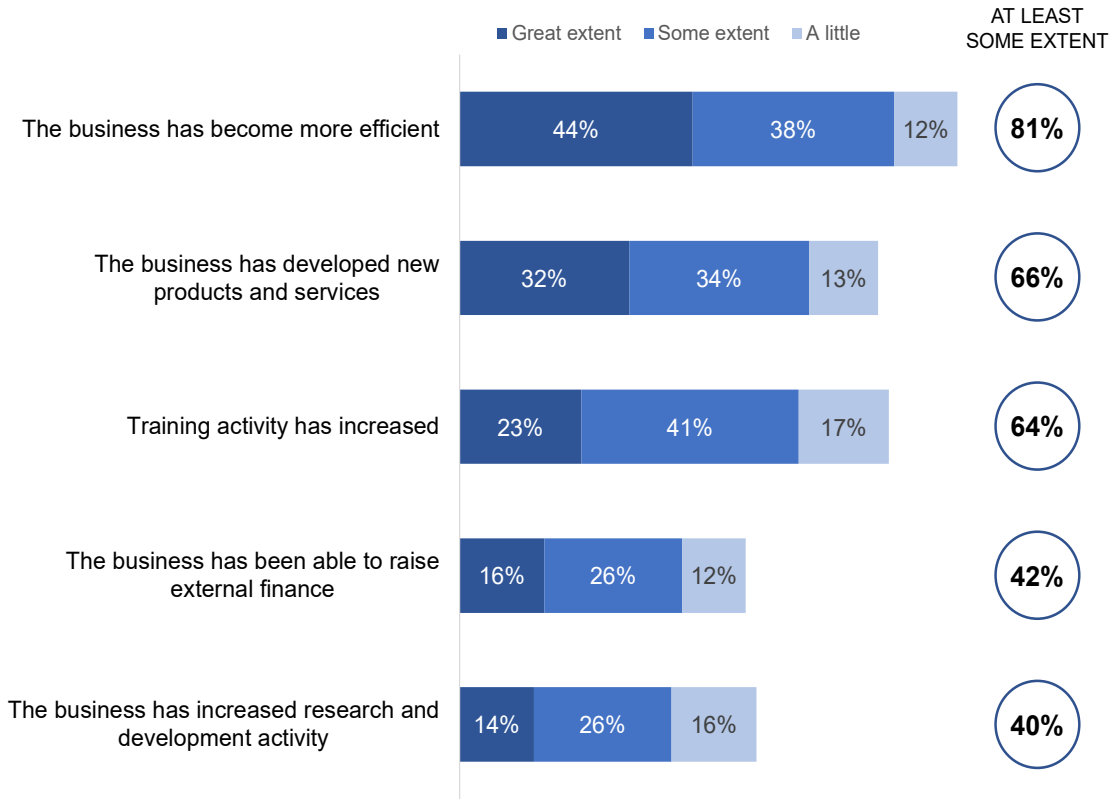
Wider Benefits

42. End beneficiaries were presented with a list of 'wider' benefits that they might have experienced as a result of the RGF support they received. The most common wider benefit cited by end beneficiaries was in making the business become more efficient (81% reported that the RGF had contributed to this at least 'to some extent'). Further, two-thirds of end beneficiaries reported that RGF had supported them in developing new products or services (66%) and increasing their training activity (64%) to at least some extent. A sizeable minority also said that the RGF support had helped them to raise external finance (42%) and increase their research and development activity (40%), as shown in Figure 4.6 below.

43. Just 6% of end beneficiaries reported negative impacts resulting from involvement with the RGF, including negative costs impacts (2%), too much paperwork or bureaucracy being involved (2%), and a very small proportion felt that they did not receive the level of support promised, or required more support (1%).

44. Around one in nine (11%) end beneficiaries also received other public-sector funded programmes in the three years since they received their RGF grant, and around half of these (48%) stated that the RGF support was at least moderately important in helping them gain access to this funding.

Figure 4.6: Wider Impacts Reported by Surveyed Beneficiaries



Base: All Scheme 3 beneficiaries (643)

Deadweight

45. 79% of surveyed beneficiaries considered it unlikely that they would have received the same level of support elsewhere, had the support not been available, indicating limited levels of deadweight in the programme. This was indicative of the extent of deadweight (i.e. businesses citing it was likely that they would have been able to receive the same level of assistance from elsewhere) and was highest among end beneficiaries in Business and Professional Services (36%), and by region, in the South East (28%) and South West (27%), compared with an average deadweight level of 19% overall.[7]

46. Only 3% of end beneficiaries considered that they would have 'definitely' achieved the same outcomes over the three-year period without the RGF support they received, reinforcing the low level of deadweight on the programme. Furthermore, amongst all of those who thought they would either 'probably' or 'definitely' have achieved the same

[7] The survey did not capture where else end beneficiaries thought they might be able to access similar support.

outcomes, the vast majority (86%) said it would have taken longer to do so without RGF support.

Case Study: Wave 2 Growth Hubs

An example of a large-scale National Programme of business support is the Wave 2 Growth Hubs Programme led by Lancaster University. The programme aims to improve access to, and use of, effective, smarter and integrated business support hubs. Twenty Wave Two City areas were eligible to apply for RGF funding from a total of £32m, 80% of which was set aside to fund bespoke business, innovation and trade support, and 20% allocated for the establishment and/or development of local Growth Hubs.

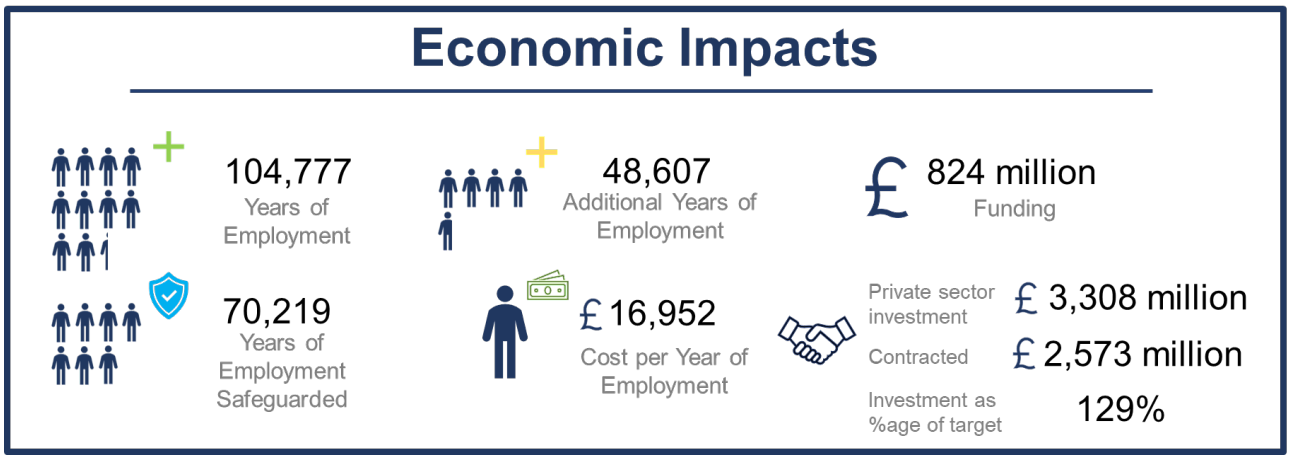
Lancaster University was chosen by the Cabinet Office and BEIS to run the programme. Key tasks included supporting Growth Hubs and partners to develop access to cost effective and locally appropriate business support services; building capacity and relevant approaches to effective business support based upon 'what works', including building a peer-to-peer network for the sharing of good practice and coordinated approaches.

One aspect was running a bidding process for RGF financial support to disburse funds to successful applicants. However, while these were supporting businesses with grants and loans, as they were through a second intermediary (the Growth Hubs) not contracted by BEIS directly, the beneficiary lists could not be collected for the econometric work.

Interviews and MI analysis highlighted several emerging benefits to date:

- As of September 2017, 5,500 verified jobs had been created or safeguarded exceeding the target of 2,500.
- Growth Hub business advisors have been successful at identifying and supporting SMEs that may not have received business support services in the past, implying additionality of impacts.
- By providing bespoke support to access grants and other business support services, the confidence and skills needed to access other forms of business support in the future is improved.
- The Hubs fulfil a coordinating role, simplifying the support landscape for local businesses by identifying and removing duplicate services.
- The programme has fostered and facilitated new collaborations between previously competing services through common branding.
- Unanticipated collaborations have emerged at a local level and interviewees perceived these to be providing added value to local businesses. For example, there is evidence that business beneficiaries are beginning to develop their own self-sustaining support networks because of the support they have received.

5 Regional Programmes: Scheme 4



This chapter presents estimates of the impacts of the Regional Programmes using econometric analysis and surveying. Like the National Programmes, lists of supported businesses and unsuccessful applicants were collected from programme intermediaries.

The chapter first assesses employment growth, turnover growth and survival using firm-level data that was linked to the business lists. The analysis also considers the wages in the supported and unsupported businesses. It then presents the results from the survey conducted amongst beneficiary businesses and unsuccessful applicants.

Findings

- Around 48,607 additional job years have been created in beneficiaries of Regional Programmes four years after support.
- Support has had a positive effect on firm survival. Exit rates for businesses treated in 2012 through 2014 are lower compared to similar unsuccessful applicants. This translates into around 1,167 of the 48,607 additional job years.
- Supported businesses are larger than beneficiaries of National Programmes and are also slightly less likely to be in manufacturing.
- Supported businesses have seen a growth in sales. The growth experienced was greater than that of comparable businesses in the BSD, and the difference was statistically significant.
- Beneficiaries surveyed reported on a range of wider benefits. The most common wider benefit cited by end beneficiaries was in making the business become more

efficient, and two-thirds of end beneficiaries reported that RGF had supported them in developing new products or services.

Econometric Analysis

1. The econometric analysis presents estimates of the additional employment and turnover in businesses benefiting from the Regional Programmes, which are a diverse set of support measures made available to businesses through intermediaries. Most intermediaries are public and arm's length bodies such as LEPs, Local Authorities, or Higher Education Institutions.

2. Business beneficiaries in Regional Programmes are about the same size in terms of the median, but with larger average employment, than beneficiaries of National Programmes in terms of employment and turnover. This suggests some skewness with larger businesses having been supported. They are also slightly less likely to be in manufacturing and are on average younger than beneficiaries of National Programmes. They are also marginally more likely to have been in receipt of other non-RGF support than National Programme beneficiaries and do – on average – receive larger amounts through these alternative streams. The effect this may have on assessing additional impacts was controlled for by using these past support measures when identifying comparison groups of businesses.

3. Broadly, alongside these differences, National and Regional Programme beneficiaries share key characteristics. They are both more like the general business population than beneficiaries of Regional Projects.

4. The methodology to assess the impact of Regional Programmes is therefore the same as that used to evaluate National Programmes. Beneficiary lists and details of unsuccessful applicants were collected from the intermediaries. Businesses were matched to the Companies House register and the Companies House registration matched to the BSD.

5. Propensity score matching is used to identify a control group of businesses comparable to the supported businesses. This is used to estimate additional impacts over and above what would have happened without treatment. Using the same approach as for National Programmes the preferred control group is taken from the unsuccessful applicants. The quality of these jobs is then assessed analysing evidence of any wage premium using ASHE.

6. The results are similar to those for National Programmes. The evidence indicates that supported businesses are growing faster than comparable businesses both in terms of employment and turnover. However, the impact in terms of the gap in job creation between beneficiaries and the matched counterfactual is marginally smaller than for National

Programmes. This could be partly because of Regional Programme beneficiaries being larger.

7. Businesses benefiting from this type of support are like beneficiaries of National Programmes in that they resemble the general business population more than beneficiaries of Regional Projects. Since they are smaller than project beneficiaries, they are also more likely to close.

8. Firm closure does have an employment impact and the exit rates for businesses treated 2013 and 2014 are around 5% lower compared to similar unsuccessful applicants This translates into 1,167 job years safeguarded through lower exit rates amongst beneficiary businesses than comparable unsupported businesses using survival modelling.

9. There is an insignificant difference in productivity growth between supported businesses and those in comparable unsupported businesses.

Employment Impacts

10. As for Regional Projects and National Programmes, the employment impacts are estimated using the number of jobs created in the supported businesses and assessing what proportion are additional through comparison with different counterfactuals.

11. Four years after support, approximately 119,000 job years were created in the 2,355 beneficiaries across cohorts in gross terms. This translates to roughly 33,000 net additional gross years of employment that had been created. The net job creation over the period was statistically significant.

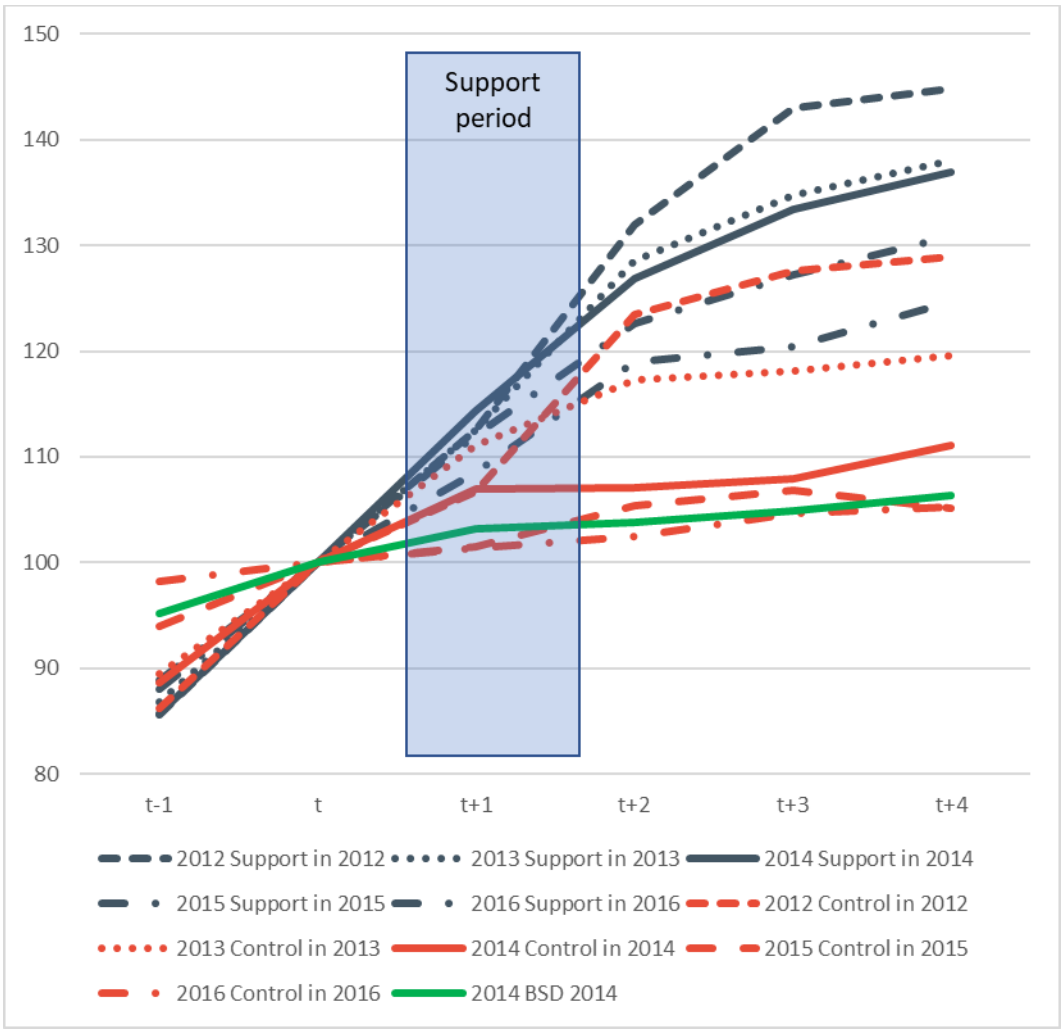
12. The Regional Programme beneficiaries showed similar trends as the National Programme beneficiaries when comparing the earlier cohorts with the later ones, suggesting that impact increases with time. However, the increase is smaller, which could be attributed to a different type of time-frame for the interventions. The Regional Programme time-frame was set for longer term and the results may not have been fully felt within the time period of analysis.

13. Unlike the National Programmes, the Regional Programmes demonstrate a marked difference in additionality ratios between the earlier and the later cohorts, with businesses treated in 2012 and 2013 having a relatively low additionality ratio compared to National Programmes. In the 2012 cohort, the additionality ratio is 23.5%. This suggests that Regional Programme beneficiaries may have created a greater volume of jobs than those of National Programmes, but that they are more likely to have generated these irrespective of receiving support. Conversely, for the cohort of 2014 and onwards, the additionality ratios are consistently higher between 57% and 93%.

47. Figure 5.1 illustrates the growth trajectory for five cohorts – from 2012 to 2016 – of National Programme beneficiaries in blue and highlights the middle cohort in using a solid line for those supported in 2014 (i.e. financial year 2014/2015). Again, the figure highlights

the 2014 cohort in a solid line, where employment growth was 36.9% over four years after support. The preferred counterfactual grows at 13.7% over the same period. The figure also indicates the pre-support growth trends of the supported and counterfactuals are close, suggesting that the matching has been successful in finding businesses on a similar growth trajectory prior to RGF support.

Figure 5.1: Employment index Regional Programme Beneficiaries and Comparator Groups



Note: Indexed job growth for cohorts of Regional Programme beneficiaries and matched control groups – derived from Model II. Matched control groups are derived from the PSM procedure, unmatched illustrate the growth trajectory of the entire match pool without any matching in 2014.

14. The 1,247 businesses that received support in 2014 grew at 26.9% in the first two years after support and 33.4% and 36.9% in the next two years. The same is true for the smaller sample of businesses securing funding in 2012/13 and those receiving support in the years 2014/15-2015/16 although the growth rates in the comparator groups vary.

Earnings Impacts

Results for Programmes

72. Businesses supported through national programmes and regional programmes pay marginally higher wages than the general business population. They experienced a significant boost to earnings around the time of the support start. Moreover, there is also a substantial earnings premium for workers who move to one of these businesses.

73. The analysis distinguishes between beneficiary units, the specific plants, offices, or branches where support was received, and beneficiary businesses, which include the whole enterprise group which was supported. Note that for small businesses with a single establishment, the unit and business are the same. Unsuccessful applicants to the scheme serve as a comparison group which are more comparable to the supported businesses than the wider ASHE population.

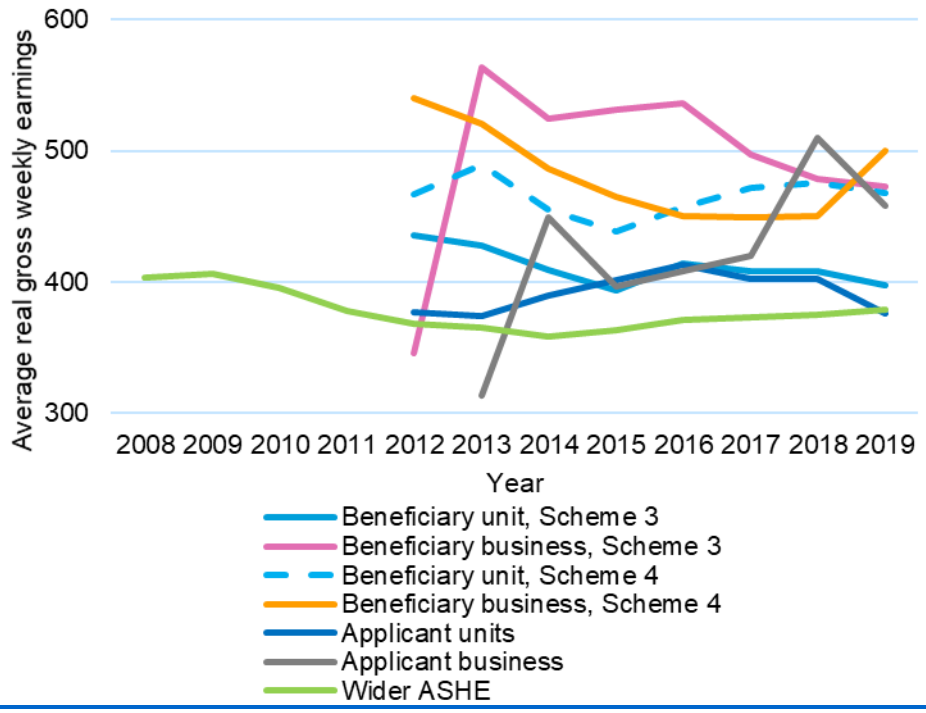
74. Table 5.1 shows summary statistics for the different groups. Earnings and hours worked are higher in regional programmes than in national programmes. The difference is similar when comparing only the supported units or the whole businesses. Earnings at unsuccessful applicants fall in the middle.

Table 5.1: Earnings data summary statistics for Regional Programmes

	Beneficiary unit S4		Beneficiary business S4		Applicant unit		Applicant business		Wider ASHE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Basic weekly pay (real)	501	312	499	324	437	290	464	291	456	380
Weekly overtime pay	23	65	20	64	22	57	26	70	14	77
Gross weekly earnings (real)	541	344	559	392	482	313	512	329	492	425
Total weekly hours	38.4	8.8	38.2	7.7	36.4	10.4	37.9	11.0	33.2	11.1
Weekly overtime hours	1.6	4.2	1.3	4.0	1.7	4.1	1.8	4.9	1.1	3.5
Age	41.7	12.9	40.3	12.1	39.5	12.8	40.4	12.6	40.7	12.8
Full-time	0.9	0.3	0.9	0.3	0.8	0.4	0.8	0.4	0.7	0.5
Public sector employer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
Observations	5,691		8,907		3,011		3,948		1,994,799	

75. Figure 5.2 shows earnings trajectories over time. Note that supported businesses only enter the calculation from the year of support start, while unsuccessful applicants enter from the application year. These averages are calculated at the business level and do not account for potential changes in the composition of the labour force over time. Real earnings are highest in national programme supported businesses but have been falling over time. Earnings at supported units by national programmes were lower on average and have fallen at a similar rate. In contrast, earnings at units supported by regional programmes have risen in recent years. Earnings in the wider ASHE population are the lowest. They fell after the financial crisis of 2008 and grew moderately since 2014.

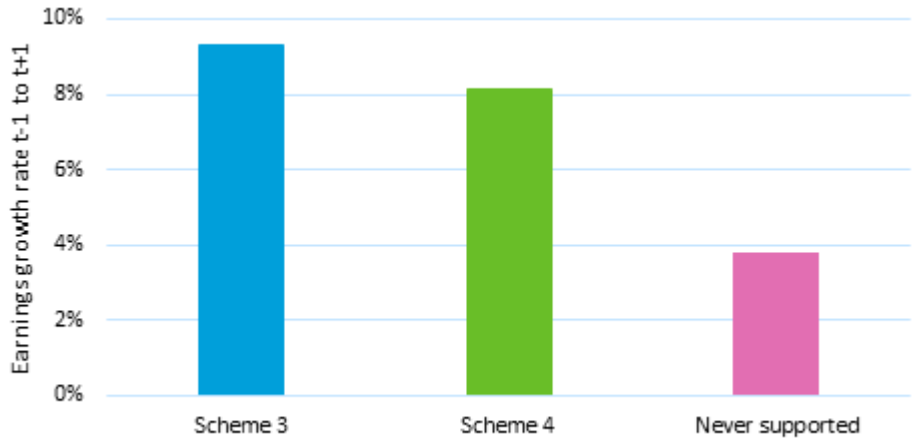
Figure 5.2: Average earnings in RGF Regional Programme supported businesses



Note: Averages were calculated in logs and then exponentiated to reduce the impact of exceptionally high earnings.

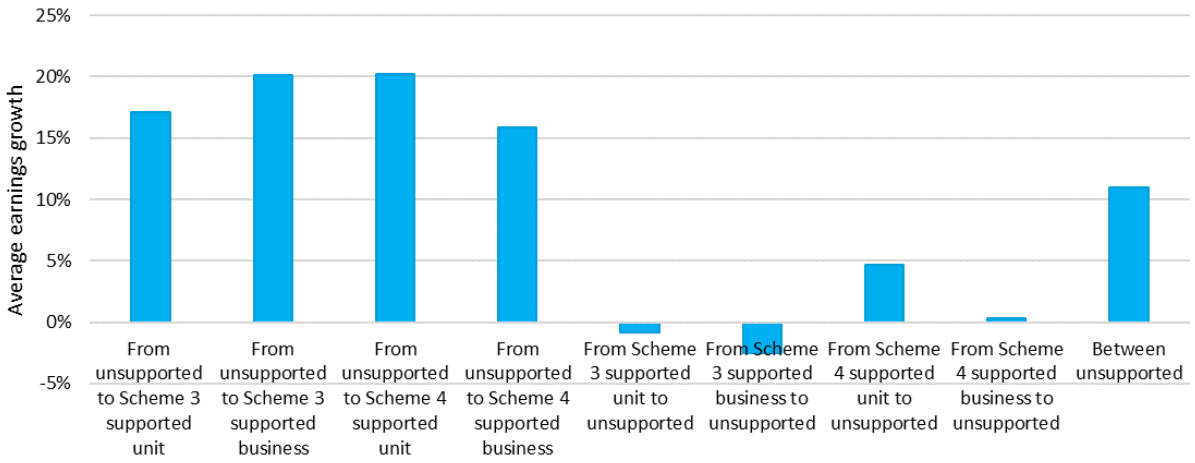
76. Figure 5.3 looks closer at the changes in earnings around the time of support start. It looks at earnings of workers who were continuously employed by supported businesses from the year before support start to the year after support start. The figure shows that earnings grew at almost 10% in firms supported by national programmes and 8% in firms supported by regional programmes. In contrast, earnings grew only by around 4% for workers continuously employed for two years by the same firm in the wider ASHE.

Figure 5.3: Earnings growth around the time of support start



77. Figure 5.4 takes a different angle and looks at earnings for workers who take up a new role at supported businesses. A job change is generally associated with substantial earnings growth, as the last column in figure 6 shows. Note that this only includes those who start a new job at a different firm from employment in another firm, not from unemployment, inactivity, school or university. Those taking up employment at a supported unit or businesses see their earnings increase between 15% and 20%. This contrast with those who leave employment at those firms to start a new job somewhere else: they experience moderate earnings increases of up to 5%, or small losses.

Figure 5.4: Earnings growth of job changers



	Earnings growth	SD	Number of observations
From unsupported to Scheme 3 supported unit	17.12%	0.58	210
From unsupported to Scheme 3 supported business	20.08%	0.61	147
From unsupported to Scheme 4 supported unit	20.22%	0.55	370
From unsupported to Scheme 4 supported business	15.86%	0.46	604
From Scheme 3 supported unit to unsupported	-0.81%	0.50	177
From Scheme 3 supported business to unsupported	-2.49%	0.46	126
From Scheme 4 supported unit to unsupported	4.69%	0.57	255
From Scheme 4 supported business to unsupported	0.31%	0.49	374
Between unsupported	10.97%	0.61	125,684

Initial results on effects from the Covid-19 pandemic

78. As ASHE is conducted in April each year, the 2020 survey captures the labour market at the beginning of the first lockdown caused by the Covid-19 pandemic in the UK. Comparing 2020 to 2019 results on earnings and hours worked gives some initial indications of the impacts of the lockdown. Crucially, ASHE also records a marker for workers whose pay was lower due to illness or furlough.

79. Figure 5.7 shows the effects at businesses supported by national and regional schemes. For supported businesses, earnings dropped slightly more than hours worked, suggesting that firms cut pay and reduced hours. Earnings and hours dropped to a larger extent than in the wider ASHE. The right panel suggests that businesses made use of the furlough scheme, as the share of employees who lost pay was multiple times higher than in 2019.

Figure 5.7: Covid-19 lockdown effect on businesses supported by national and regional schemes

Turnover and Productivity Impacts

80. Moving from employment impacts to assessment of turnover and productivity, the analysis found a higher growth rate in sales amongst treated beneficiaries across both comparison groups and models. The treatment effect was statistically significant in both the matched businesses from the wider BSD, and the matched unsuccessful applicants where applicants were matched also on receipt of other support.

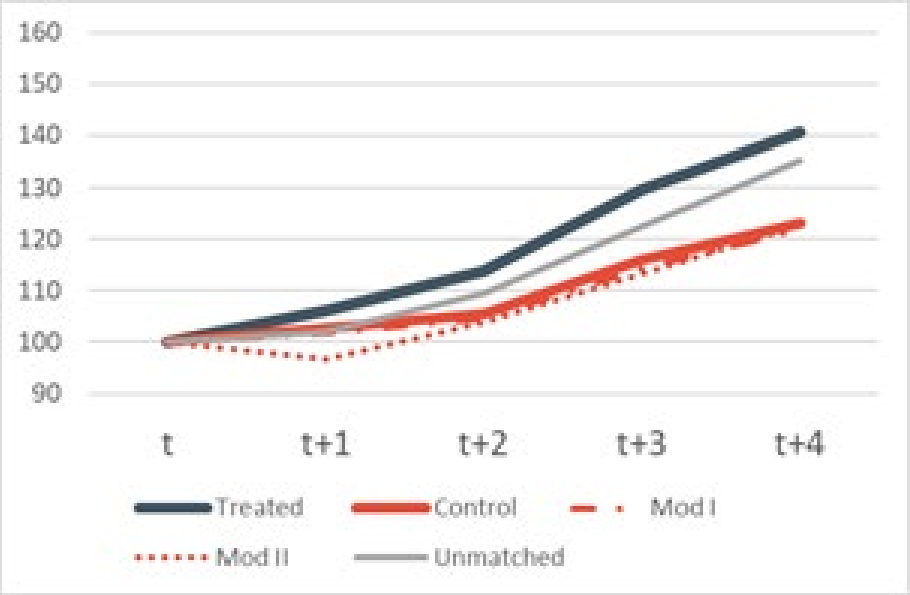
81. The difference in productivity growth is insignificant between supported businesses and those in comparable unsupported businesses. Real turnover growth therefore is comparable to the growth seen in employment.

82. Business beneficiaries displayed higher turnover growth than the matched control groups across all cohorts and the difference statistically significant. In the 2013 cohort, in Figure 5.8, beneficiaries' turnover grew 36.4%; compared with 18.4% and 8.4% for the matched unsuccessful applicants and matched businesses in the wider BSD, respectively. This trend held true across all cohorts, with beneficiaries growing at around 36%, followed by unsuccessful applicants who grew between 19% and 17%, and then the BSD matched sample who fluctuated between negative growth and 10%. The additionality ratio is also higher for the matched BSD than the matched unsuccessful applicants.

83. Growth rates decreased slightly across the cohorts, with the highest growth rate of 32.3% displayed among businesses supported in 2012 compared to 30.0% and 21.4% for the 2015 and 2016 cohorts respectively. This is in line with expectation, as more recent support means that there has been less time for the beneficiary to implement the project and see impacts materialise. However, the relatively stable results for beneficiaries tracked

over 4 years (of around 30%) across the cohorts suggests that the impacts have had time to mature and that the timescales applied are appropriate.

Figure 5.8: Real Turnover Index for Beneficiaries (2013) and Comparator Groups



Note: Indexed real turnover growth for 2013 cohort of programme beneficiaries and control groups – derived from Model II. Matched control groups are derived from the PSM procedure, unmatched illustrate the growth trajectory of the entire match pool without any matching. The total growth across the period corresponds to the turnover growth column in Table 15. The growth trajectories correspond to the difference-in-differences estimate in the same table. Each growth trajectory is indexed at its baseline value.

84. The productivity analysis of Regional Programmes yielded similar results to the National Programmes. The analysis of productivity growth did not yield statistically significant differences between the treated and the control groups. Productivity growth fluctuated across the cohorts, with businesses supported in 2012 and 2014 displaying small positive productivity gains, but businesses supported in 2013 showing a small negative growth.

Beneficiary Survey

85. A total of 1,086 end beneficiaries responded to the survey, representing a response rate of 41% of all contacted sample. Of these beneficiaries, 462 completed an online datasheet providing more detailed information on their business. A total of 444 unsuccessful applicants responded to the survey.

86. Coinciding with National Programmes, end beneficiaries tended to be micro or small (63% had 0-9 employees, and 24% had 10-49 employees). They most commonly operated in the Manufacturing sector (42%) and Business and Professional Services (20%). Unsuccessful applicants were typically even smaller, and most (83%) were micro businesses. End beneficiaries also tended to be older than unsuccessful applicants, with

the majority (52%) having traded for over ten years whilst the majority of unsuccessful applicants had traded for less than ten years (65%). Just under half (46%) of end beneficiaries export (46%) but, similar to beneficiaries of National Programme support, this tends to account for a small proportion of sales and both end beneficiaries and unsuccessful applicants were likely to consider their main competition to be based in the UK (75% and 80%, respectively).

87. As with end beneficiaries of National Programme support, investment for specific equipment or machinery was the most common form of support accessed by beneficiaries (38%) and intended by unsuccessful applicants (27%). 15% of end beneficiaries used the funding for property purchase or development.

88. Almost half of all end beneficiaries stated that their primary goal in applying to the RGF was to grow their business. Between one in seven and one in 10 cited goals of increasing the workforce (14%), improving efficiencies (13%) and investing in new products (10%).

Recruitment and Retention

89. Amongst respondents, the RGF appears to have contributed positively to both staff recruitment and retention: half reported that the RGF programme had positively impacted these areas ‘to a great extent’, while a further 28% reported it had positively impacted ‘to some extent’.

90. Seven in ten end beneficiaries reported that the number of employees at their site had increased since they first received RGF support, with this proportion significantly greater among end beneficiaries in the manufacturing industry (75%), and lower among end beneficiaries in Business and Professional Services (61%).

91. In absolute terms, end beneficiaries reported that the RGF had resulted in the creation of around three jobs on average (median) at each site, while an average of one existing job was also safeguarded as a result. The majority (78%) of end beneficiaries reported that all the new jobs were for full-time positions and nearly all reported that all the new jobs were for roles on permanent contracts. The same was broadly true for safeguarded jobs, where 89% reported that all their safeguarded jobs were full-time and almost all reported that all of the jobs safeguarded were in permanent positions.

92. Nearly half (47%) reported that at least one of their new jobs required Level 4 or above qualification, and a similar proportion (48%) reported that they offered at least one job to those with Level 2 or 3 qualifications. A small minority (5%) only offered new jobs for those at entry level or level 1, while one in ten (11%) only offered new jobs that did not require any qualification.

93. Over a third (37%) of end beneficiaries with new jobs had taken on individuals not in education, employment or training (NEET), demonstrating the positive impact the RGF programme has had in helping individuals outside of the labour market into work. The

same proportion (37%) had taken on individuals who were in education prior to securing the job.

Financial Impacts

94. The majority of end beneficiaries were in a stronger financial position three years after they first received RGF support: seven in ten (71%) reported that their turnover was higher for the last complete financial year than it was in the year preceding their RGF support, and the vast majority (84%) of end beneficiaries reported that the RGF had had a positive impact on turnover. There were limited subgroup differences regarding turnover growth. However, end beneficiaries in the South West (80%) were significantly more likely to report that their turnover had increased, compared to the UK average, whereas end beneficiaries in the North East (64%) and those in the Manufacturing sector (67%) were significantly less likely to report this.

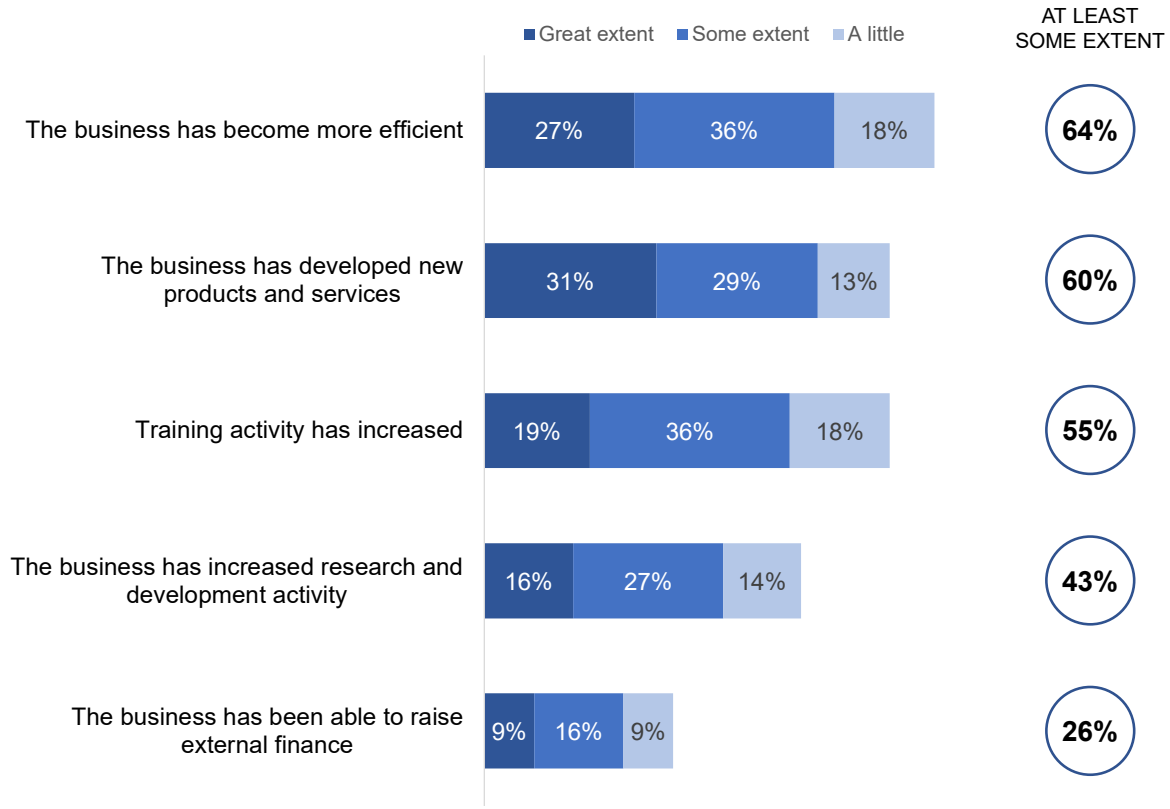
95. In contrast, six in ten (60%) unsuccessful applicants reported an increase in turnover over this period, with 34% reporting that their turnover was significantly higher.

96. End beneficiaries that completed the online datasheet provided further detail on the change in turnover they experienced. The median average annual turnover prior to receiving RGF support was £1.2m, and this had increased to £1.43m three years later. Median average annual profit increased from £71,000 to £100,000. With costs of involvement in the programme relatively low (a median of £2,000).

Wider Benefits

97. The most common wider benefit cited by end beneficiaries was in making the business become more efficient (64% reported that the RGF had contributed to this at least ‘to some extent’), while the development of new products and services (60%) and an increase in training activity (55%) were also commonly cited. Furthermore, four in ten (43%) considered that the RGF support had helped them increase their research and development activity, and a quarter (26%) found it helped them raise external finance. The likelihood of experiencing such wider benefits varied considerably by the type of support sourced through the RGF.

Figure 5.9: Wider Impacts Reported by Surveyed Beneficiaries



Base: All Scheme 4 beneficiaries (1,086)

98. Around one in eight (13%) unsuccessful applicants also reported that they had experienced positive impacts despite their application for funding being unsuccessful. Typically, such impacts related to the rejection encouraging them to re-focus their business, improve subsequent funding applications, and seek alternative funding.

99. On top of the costs businesses experienced as a result of engaging with the RGF, as reported earlier in this chapter, 15% of end beneficiaries reported certain negative impacts resulting from involvement with the RGF, with the most common being the extent of paperwork or bureaucracy involved in the process (7%).

100. A quarter (26%) of end beneficiaries also received other public-sector funded programmes in the three years since they received their RGF grant, and around half of these (52%) stated that the RGF support was at least moderately important in helping them gain access to this funding. A slightly lower proportion of unsuccessful applicants (24%) had found public-sector funding from elsewhere, with four in ten (41%) of these stating that their RGF application had helped with this subsequent funding application.

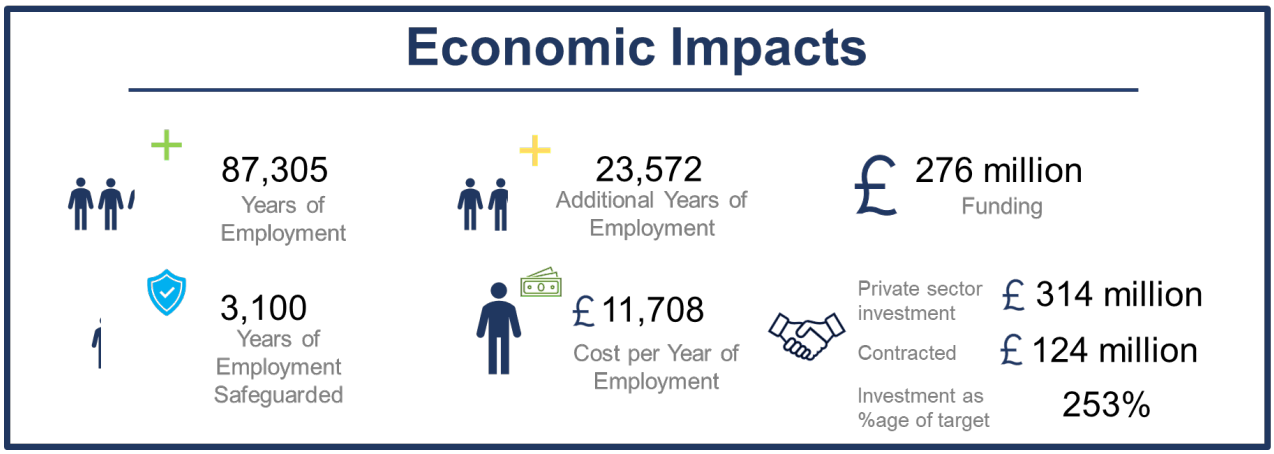
101. Unsuccessful applicants were also asked about the levels of success they had finding the type of support they had applied to through the RGF from other sources. The majority (58%) of unsuccessful applicants reported that they were unable to get the support that they needed, and only a small minority (13%) reported that they received a sufficient level of alternative support, highlighting the importance of the RGF for most unsuccessful applicants. For those who were able to find support from elsewhere, this was typically of a financial form, from private investors (21% of those who were able to get support from elsewhere), banks (20%) and other local funding sources (14%). A small minority (8%) used their own personal funds.

Deadweight

102. Three-quarters of end beneficiaries considered it unlikely that they would have been able to receive the same level of support elsewhere, had the RGF support not been available, indicating limited levels of deadweight in the programme. End beneficiaries who used the RGF support for specific equipment or machinery (81%) were significantly more likely to think they would not have been able to find similar support without the RGF. Only 9% of end beneficiaries considered that they would have 'definitely' achieved the same outcomes over the three-year period without the RGF support they received (rising to 18% among businesses in the North East), reinforcing the low level of deadweight of the programme.

103. These findings are supported by the experience of unsuccessful applicants, only 13% of whom were able to get the support they were seeking from the RGF from elsewhere, although this rose to 24% among businesses with 10+ staff.

6 AMSCI: Scheme 5



The Advanced Manufacturing Supply Chain Initiative (AMSCI) is a large-scale programme that has supported UK advanced manufacturing supply chains to boost competitiveness. The programme has received RGF funding of £276m and has exceeded its targets in terms of Private Sector Match funding and reported jobs.

The chapter assesses employment and turnover growth using firm-level data that was linked to the business lists. The analysis then provides an overview of the additional employment measurement, considering the wages in the supported and unsupported businesses. This chapter also includes the results from a series of depth interviews with project leads and the findings from a business survey.

Findings

- The AMSCI supported businesses experienced strong employment growth. From year of treatment to four years later 87,305 years of employment were generated through new jobs.
- The analysis indicates that 27% of the employment growth is additional, in not being seen in the comparable businesses over the period. For the 389 supported AMSCI businesses, this equates to a total 23,572 additional years of employment out of the 87,305, an average of 61 per enterprise.
- The cost of programme is £276m, implying a cost of £11,708 per additional job.
- The supported enterprises experienced a growth in employment of 20% and a growth in real turnover of 23% over the four-year period post support.

Econometric Analysis

1. The Advanced Manufacturing Supply Chain Initiative (AMSCI) was set up in 2011 as a competitive fund run as part of the RGF, alongside the other support schemes. It sought to address traditional market failures associated with imperfections in financial markets, spill over effects of R&D activity, and the challenge for firms to internalise the full benefits of training. It was designed to improve the global competitiveness of UK advanced manufacturing supply chains. Funding was made available to support research and development, skills training and capital investment to help UK supply chains achieve world-class standards and encourage major new suppliers to locate in the UK.

2. Funding was allocated over seven discrete competitive funding rounds, and £276m has been committed to projects.

3. A scoping report and early assessment of additionality of the programme was published by BEIS in 2015 (BIS, 2015). The study identified benefits related to raising of capital, R&D and training expenditure amongst beneficiary firms as potential benefits of the programme. These could then have a positive impact on productivity (in terms of labour productivity and Total Factor Productivity). The study also considered that if this translated into reductions in output prices it could lead to an increase in the market share of programme beneficiaries and could then be accompanied by an increase in overall output (GVA) and employment. If this strengthening of the competitiveness of manufacturing supply chains were to occur, it would help beneficiary firms resist competition from non-domestic suppliers and support domestic firms to increase exports.

4. The beneficiary list covers 686 incidences of support, accounting for a total of £276m of investment. Many were collaborative and in total 645 businesses were involved. After matching, there are 473 individual businesses. Where businesses received multiple instances of support, businesses were accounted for once at the first incidence of support and the total amount of funding received from then on was calculated. There were also 263 rejected applicants.

5. The analysis uses statistical matching to identify comparable businesses to act as the counterfactual. Propensity score matching is used to match each supported business to the one that most closely resembles it from the unsupported businesses. In this instance, looking at pre-support trends and propensity score balance tests support using the rejected applicants, as opposed to wider BSD, provided an appropriate counterfactual. The supported businesses and unsuccessful applicants tended to be in manufacturing, in knowledge intensive sectors of the economy and be innovative (holding patents and in receipt of Innovate UK funding prior to support).

Employment Impacts

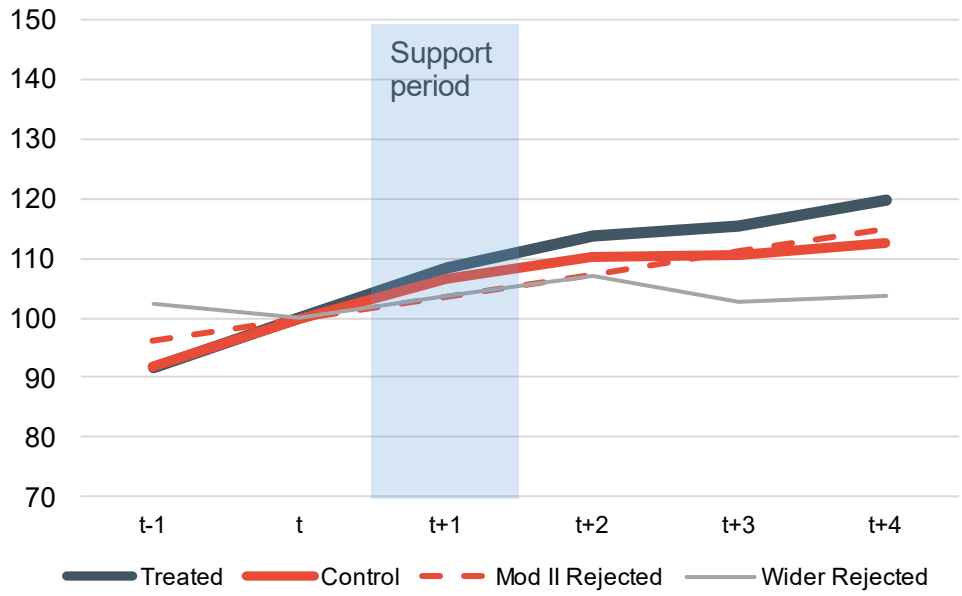
6. The growth in employment is plotted in Figure 6.1 for the supported businesses and set of comparator businesses. Growth is measured in average log employment, so that any outliers do not unduly influence the estimation and so that the focus is on the growth in

firm performance. In each figure, the performance is indexed so that, in the year before support, the value is 100.

7. Figure 6.4 indicates the employment change for beneficiary businesses. The line "Treated" is the index of employment for supported businesses, with observations stacked, in that the supported are tracked not in terms of years but in terms of the years before and after first support. This centres analysis on the year of support: all 389 supported business, where projects begun in different years, are recast in terms of the year projects started, so that the period *t* is the year before support.

8. The "Control" line is the matched control group using the rejected applicants. Rejected applicants were used multiple times, in that their performance matched in different years. The "Wider Rejected" line represents employment growth across the unmatched, rejected businesses. The dotted line presents model II for matching to the rejected applicants. The treated businesses are on a very similar growth trajectory to the control group until treatment and then experience stronger growth than the matched control group.

Figure 6.4 Employment change after support



Analysis of BSD linked to AMSCI beneficiaries and other datasets; Employment estimates with *t* before support then businesses are treated in a year-long financial year centring on *t+1*. Points *t* +2 and *t* +3, representing two and three years after the pre-support point; employment estimates centre on September in each year. BSD enterprises in this modelling were used in matching all cohorts of the supported businesses, hence sample sizes higher and businesses could be used more than once in the counterfactual.

9. The degree to which the growth rates differ can be tested using difference-in-difference, estimating how changes in employment in the treated and counterfactual (the first difference) then differs between the supported and control groups (the second difference). Table 6.2 indicates estimates of this difference-in-difference for the preferred

comparison group, the matched BSD, and two other models that use the rejected applicants pool:

- The growth over four years in employment is 19.7% in the supported businesses. This estimate is greater than comparable businesses over the four-year period.
- However, two years after support, where growth is 13.8%, the difference-in-difference estimates suggest around 3.4% of the growth is only seen in the supported businesses.

Table 6.3: Estimates of difference-in-differences

		Difference-in difference (t-stat)		
Model used	**Growth in Treated**	**Diff in Diff**	**Additionality [8]**	**BSD Mod II**
Using the Rejected difference in differences estimates				
Employment Growth, after 1 year	8.3%	1.7% (0.69)	21%	4.2% (1.95*)
Employment Growth, after 2 years	13.8%	3.4% (0.97)	24%	6.1% (1.99**)
Employment Growth, after 3 years	15.5%	4.4% (1.03)	28%	12.5% (2.72***)
Employment Growth, after 4 years	19.7%	6.4% (1.20)	32%	15.2% (2.79***)

Notes: Table reports the difference-in-difference for variables. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels. Difference in Difference is growth in treated minus growth in control and additionality is the DID divided by the growth in treated.

10. The difference-in-difference estimates after two years indicate that some of the growth that occurred in the supported businesses did not occur in the matched counterfactual. Individual annual estimates for the difference prove insignificant, but the consistent difference over four years as a panel indicates the divergence is persistent statistically in the preferred model. This is additional growth and 27% [9] of growth seen in the supported businesses is not observed in the comparable businesses. Table 6.4 uses this to estimate the years of employment that are additional through AMSCI support.

Table 6.4: Estimates of jobs created for AMSCI beneficiaries

Model used	**Additionality ratio**	**Gross job years created from treatment to 2015**	**Net additional job years created**	**t-stat**
Using the Rejected difference in differences estimates				
Preferred model (Rejected Mod I)	27%	87,305	23,572	0.69 – 1.20
Formula for calculation: $\text{Net additional job years created} = \text{Gross job years created} * \frac{Treatment\ effect\ (ATT)}{\text{Growth rate in treated group}}$				

Note: Table reports the net total number of job years created from treatment-year to three years after. Additionally ratio is calculated as the ATT-estimate divided by the growth rate in the treated group. T-stat for ATT from PSM analysis listed. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels.

[8] Additionality is calculated by dividing the DID (treated-control) / treated
[9] Total additionality is the average additionality for all years.

11. The gross job years for the four years from treatment to 2015 is 87,305. The additionality using the preferred model is 27% indicating 23,572 years of employment were additional. For the 389 supported matched businesses, this is about 61 jobs per business. The cost of programme for the matched 389 business sample is £220m, implying a cost of £9,332 per additional job[10]. In this model, the difference-in-difference is not significant (while other models do have positive and significant estimates). So, while there is evidence that attribution to the support measure may be difficult in any single year of support, Table 6.4 – which covers the growth in four successive years – does indicate some robustness to the trends seen.

Earnings impacts and the quality of jobs

12. This section explores the "wage premium" of AMSCI supported employment. The premium is that part of any higher wage after taking account of ability, skills and experience. A premium may arise if the worker is more productive, and the higher wage reflects this.

13. Businesses that benefitted from AMSCI support pay substantially higher wages than non-supported businesses. Among supported businesses, primes pay the highest wages with wages at supply chain businesses significantly lower, but still above the wider ASHE sample. Information on unsuccessful applicants to the scheme is also available. Their wages are lower than at primes but higher than at supply chain businesses. Employees who start a new job at a supported business earn a substantial wage premium, both at prime and supply chain businesses.

14. Table 6.3 summarises the earnings data. Employees in AMSCI beneficiaries are categorised as "supported" starting from the year the business started an AMSCI project and every year thereafter (unless they leave the business). Among all groups of businesses considered – supported units in the prime businesses and supply chain, supported businesses outside the supported unit (considering primes and supply chain jointly), applicant units and businesses, and the wider ASHE – earnings are by far the highest in supported prime units. This is also reflected in slightly longer working hours and a slightly higher share of employees in full-time employment.

[10] As above, some of the matched beneficiaries contain missing funding amounts and so £214m is for 262 beneficiary businesses.

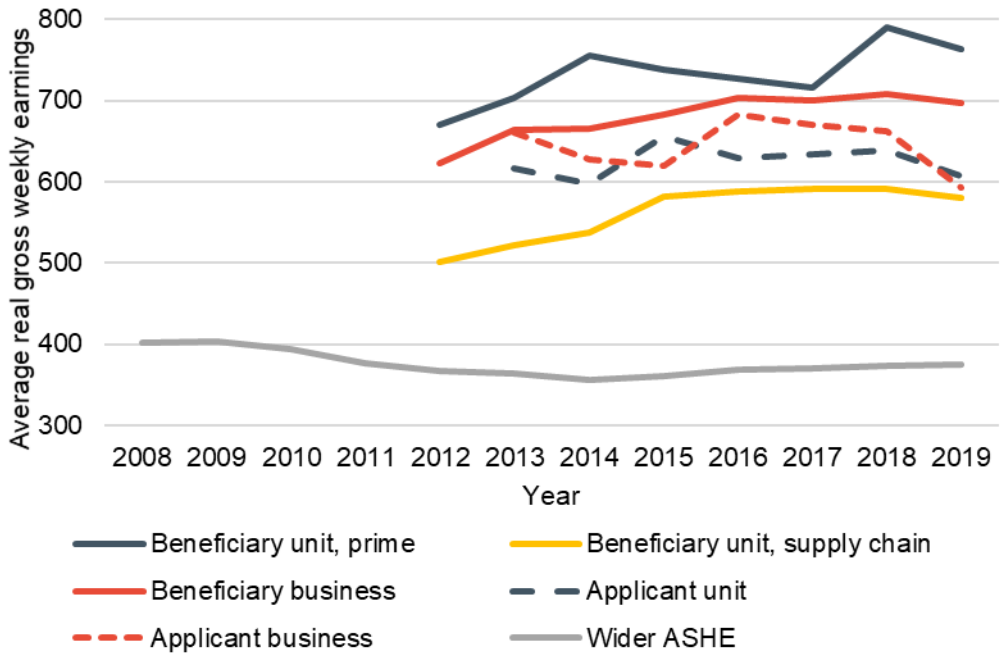
Table 6.7: Earnings data summary statistics

	Supported unit, prime		Supported unit, supply chain		Supported business		Applicant unit		Applicant business		Wider ASHE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Basic weekly pay (real)	742	393	638	439	658	338	663	373	650	372	453	378
Weekly overtime pay (real)	36	77	19	65	27	74	24	79	31	100	14	77
Gross weekly earnings (real)	832	429	674	455	756	384	725	389	733	429	488	422
Total weekly hours	39.8	6.2	35.8	8.0	38.7	5.6	36.2	7.2	37.3	7.8	33.2	11.1
Weekly overtime hours	2.0	4.2	1.0	3.5	1.4	3.6	1.1	3.3	1.6	5.0	1.1	3.5
Age	40.8	12	42.8	11.9	42.3	11.4	42	12.1	42.7	12	40.7	12.8
Female	0.22	.41	0.38	0.49	0.26	0.44	0.29	0.46	0.28	0.45	0.52	0.5
Full-time	0.96	0.2	0.88	0.33	0.96	0.19	0.9	0.3	0.92	0.27	0.7	0.46
Public sector employer	0	0	0	0	0	0	0.01	0.095	0.02	0.14	0.25	0.43
Observations	783		2341		4873		5352		6640		2006929	

Note: The table presents a snapshot in 2018.

15. Figure 6.6 plots average earnings in businesses from the start of the AMSCI project. Weekly earnings are considerably higher at supported and applicant businesses. However, earnings growth seems to be faster at supported units and wider businesses than among the applicants. While earnings fell between 2008 and 2014 in the wider ASHE sample and then remained stable, earnings stayed stagnant at applicant businesses from 2013.

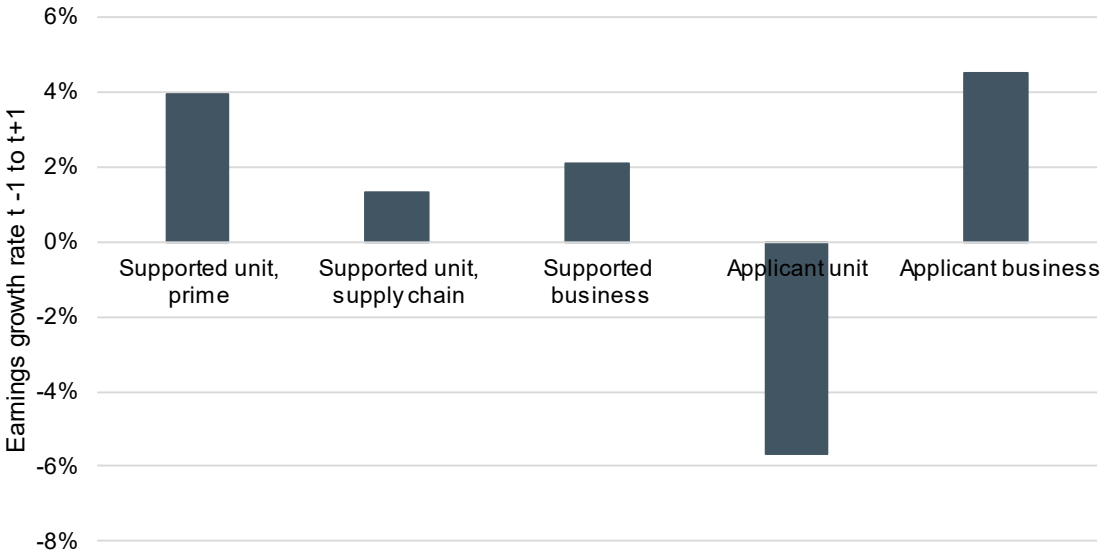
Figure 6.6: Average earnings in RGF Regional Project supported businesses



Note: Averages were calculated in logs and then exponentiated to reduce the impact of exceptionally high earnings.

16. Figure 6.7 looks at earnings growth around the time of the start of the AMSCI project. These figures only include individuals continuously employed by the same business between consecutive years, so they are not affected by businesses' hiring and firing decision. Supported units that are primes in their supply chain experience significant earnings growth of almost 2%. Meanwhile, supported units in the supply chain experience a decline in earnings of a similar magnitude. Supported businesses outside the supported units experience small earnings growth, smaller than unsuccessful applicants.

Figure 6.7: Earnings growth around the time of support start

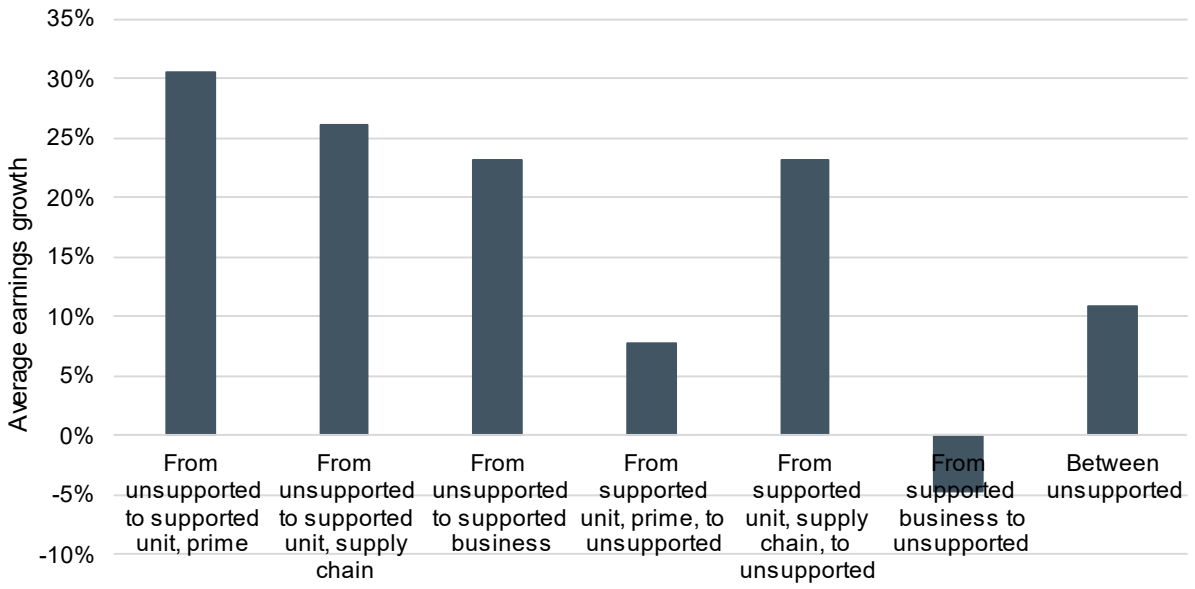


Note: Earnings growth from year of support start to first year after support start.
Includes earnings from employees that moved to the firms during this period, but could be restricted to those who stayed on payroll throughout.

17. Figure 6.8 looks at the wage effect of job switching to or from a supported business. Switchers to and from AMSCI project supported businesses are considered if the switch occurred in the year of first support or any year thereafter.

18. Figure 6.8 shows a large earnings premium from moving to a supported unit or business. Employees taking up a new job at a supported prime unit earn on average 30% more than in their previous job. For supported units in the supply chain, the figure is 26% and 23% for supported businesses. For employees who leave supported businesses, the results are mixed. Employees who leave a supported prime unit earn 8% more than in their previous job. However, this is less than the 11% earnings premium job changers between unsupported businesses in the wider ASHE population receive. Employees that leave a supported business in the supply chain still experience a substantial increase in their earnings, of 23%.

Figure 6.8: Earnings growth of job changers

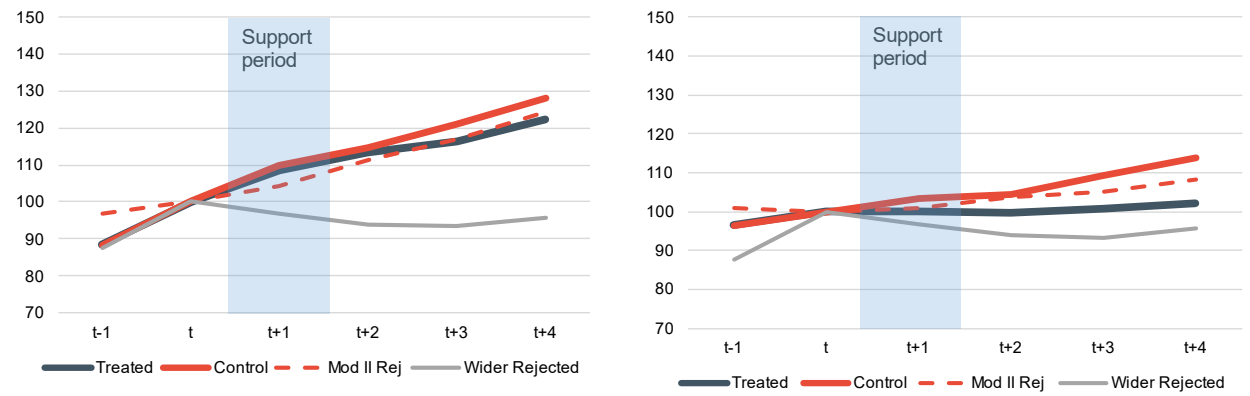


	Earnings growth	SD	Number of observations
From unsupported to supported unit, prime	30.52%	0.45	29
From unsupported to supported unit, supply chain	26.06%	0.53	101
From unsupported to supported business	23.18%	0.46	206
From supported unit, prime, to unsupported	7.77%	0.79	20
From supported unit, supply chain, to unsupported	23.21%	0.62	55
From supported business to unsupported	-4.75%	0.43	132
Between unsupported	10.80%	0.60	128,708

Turnover Impacts

19. Impacts of support on the real turnover and productivity changes for businesses are indicated in Figure 6.5. These are constructed in a similar manner to the employment figures. Growth is measured in average of log real turnover and the performance is indexed. Treated businesses experience stronger turnover growth than the control group and the wider rejected applicants. Productivity growth is also stronger in treated businesses than the control group.

Figure 6.5: Real Turnover and Productivity Growth in AMSCI supported businesses



Analysis of Rejected Beneficiaries linked to AMSCI beneficiaries and other datasets; Turnover estimates with *t* before support then businesses are treated in a year-long financial year centring on *t+1*. Points *t* +2 and *t* +3, representing two and three years after the pre-support point; employment estimates centre on September in each year. Rejected enterprises in this modelling were used in matching all cohorts of the supported businesses, hence sample sizes higher and businesses could be used more than once in the counterfactual.

20. Figure 6.5 indicates that turnover growth tracks employment trends, suggesting that as businesses expand their workforce, their sales are growing as well. The difference in difference suggests a growth of 22.4% in real turnover for the supported AMSCI businesses however, as the figure suggests, when compared to their comparators, the difference in differences are negative.

Table 6.5: Estimates of difference-in-differences

		Difference-in difference (t-stat)		
Model used	**Growth in Treated**	**DID**	**Additionality**	**BSD Mod II**
Using the Rejected difference in differences estimates				
Turnover Growth, after 1 year	8.4%	-1.3% (-0.28)	-16%	8.5% (1.88*)
Turnover Growth, after 2 years	13.5%	-1.1% (-0.18)	-8%	13.4% (2.18**)
Turnover Growth, after 3 years	16.4%	-3.9% (-0.61)	-24%	22.5% (3.22***)
Turnover Growth, after 4 years	22.4%	-4.4% (-0.63)	-20%	24.4% (3.17***)

Notes: Table reports the difference-in-difference for variables. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels.

21. The difference in difference estimates for productivity are again negative however they are not statistically significant for the control group. This is not surprising, as the variance of these measures tends to be high, making precise estimation difficult.

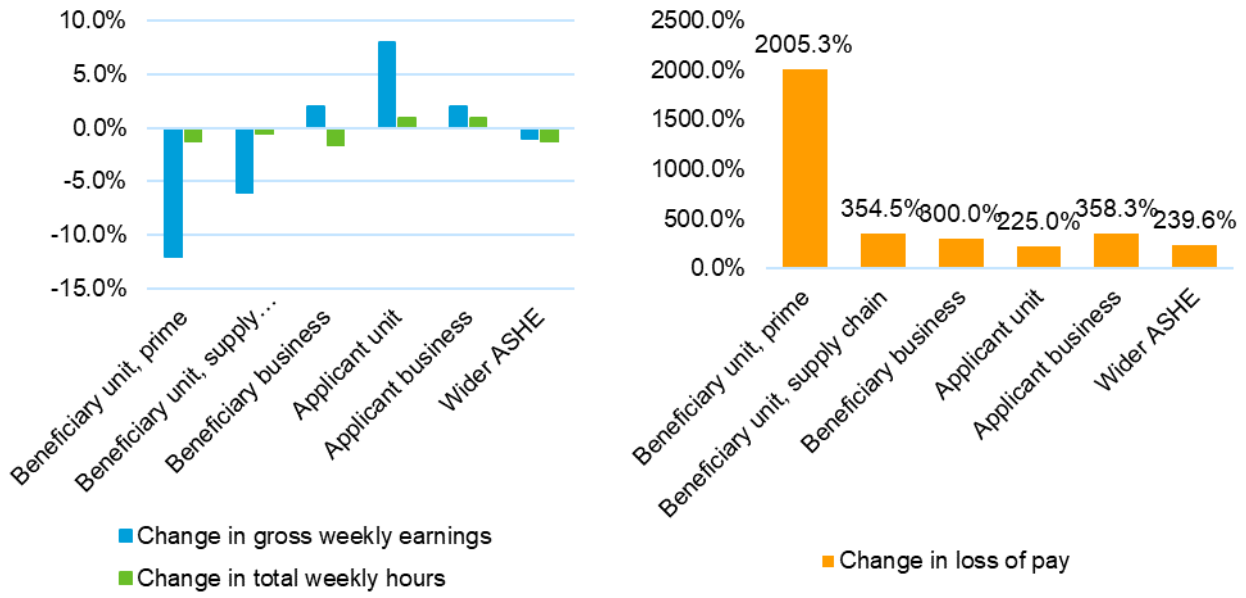
Table 6.6: Estimates of difference-in-differences

Difference-in difference (t-stat)		
Model used	**Growth in Treated**	**DID**
Using the Rejected difference in differences estimates		
1yr difference log real prod	0.1%	-3.0% (-0.64)
2yr difference log real prod	-0.4%	-4.4% (-0.75)
3yr difference log real prod	0.7%	-8.0% (-1.35)
4yr difference log real prod	2.2%	-10.2% (-1.73*)

Initial results on effects from the Covid-19 pandemic

22. As ASHE is conducted in April each year, the 2020 survey captures the labour market at the beginning of the first lockdown caused by the Covid-19 pandemic in the UK. Comparing 2020 to 2019 results on earnings and hours worked gives some initial indications of the impacts of the lockdown. Crucially, ASHE also records a marker for workers whose pay was lower due to illness or furlough.

Figure 6.9: Covid-19 lockdown effect on businesses supported by AMSCI



23. Figure 6.9 looks at effects at businesses supported by AMSCI. The picture is mixed across the different groups, with overall small declines in hours but large declines in earnings in beneficiary units both at primes and in the supply chains. In contrast, in the wider supported businesses and unsuccessful applicants, earnings increased.

Case Studies

24. The econometric analysis of AMSCI was complemented by case studies to contextualise the findings on employment, turnover, productivity and wage premia, and to indicate other benefits both in the supported businesses and beyond in supply chains or collaborators.

25. Case studies were conducted on 10 recipients of AMSCI funding focused on manufactures including but not limited to, metal manufacturing, vehicles, diverse appliances and medical sector related manufacturing. The interviews were for primes in collaborative projects, so that the evidence centred on the views of the leaders in a project, with the project often then having several collaborating businesses (phone interviews covered the supply chain).

26. These companies were interviewed and evaluated on the basis of the goals of AMSCI to improve the global competitiveness of UK advanced manufacturing supply chains. Questions also covered how AMSCI supported research and development, skills training and capital investment. Other areas covered included improving standards and decision making on locating operations in the UK.

27. Projects had delivered their intended activities and outputs. Many were then on track to deliver outcomes and impacts – the investment and private sector leverage along with the contracted jobs. Several interviewees stated the that the full impact of the AMSCI funding had not yet been felt due to the timeframe of when the funding was received compared to the point of its evaluation.

28. Recipients of AMSCI support report high levels of satisfaction with the impacts they have achieved and the administration of the project. AMSCI was highlighted as unique in its size and in the type of projects it supports, covering R&D to production, as opposed to other support mechanisms that stop at the R&D stage. Most interviewees mentioned that due to the unique nature and capability-building of AMSCI, they would pursue more similar opportunities after the end of the project.

Project Logic

29. The most common project aims were growth/increasing turnover; designing and producing an innovative product; streamlining the supply chain or making it more efficient; growing the sector in the UK and avoiding offshoring. Reducing the impact on the environment was a part of several projects, although never a driving factor. Many projects exhibited a mix of all the above.

Employment Impacts

30. Interviews discussed how the jobs safeguarded and created were estimated as applications were developed. Expected employment impacts were modelled comparing expected project outputs against the baseline and most likely alternatives. As the rationale

for applying was often to build a business case to remain within the UK, a large part of the jobs reported were jobs safeguarded through avoidance of plant closure and relocation.

31. Having an AMSCI commitment influenced the safeguarding of jobs as a result of the contractual obligations. For instance, because of their project receiving AMSCI support, a facility was built in the UK instead of China. Another business reported that the project aimed to strengthen the case for investment in the UK, with job creation and economic output, as opposed to locating in Morocco.

Turnover and Productivity

32. Interviews highlighted noticeable productivity gains and increases in turnover for successful applicants that were interviewed. Productivity gains arose from

- Tackling inefficiencies across the end-to-end supply chain to improve manufacturing and supply of goods.
- Implementation of newer technologies, which lead to faster and more responsive production processes with improvements in tracking and compliance.

33. Some benefits of projects included facilities that showcased/demonstrated technological accomplishments of companies which led to improvements in abilities to attract further funding or investment. This in turn, would lead to higher turnover.

Wider Impacts

34. Project leads often noted that the collaboration, co-creation and information sharing they experience during the AMSCI project intensified the way they worked with partners, although a few maintained much the same supplier-customer relationship as before. Future collaborations developed with some consortium members after the close of the project.

35. Both pharmaceutical projects pointed to collaborations between pharmaceutical firms that would never have shared resources or knowledge without being part of a common project, indicating that the level of pre-competition collaboration achieved through AMSCI was previously unheard of between large firms in their industry. Case studies suggested improvements in medical related domains which would have improved the UK's response to the handling of Covid-19 (for instance the production of ventilators and antibody taskforce).

Limitations and Constraints

36. Most projects would have happened much slower or only in part without AMSCI funding, some not at all. The typical profile of project is large-scale and ambitious, and AMSCI was often referred to as a facilitator or a way to de-risk investment; to give either the firm's board or other investors the confidence to commit to the project. Nevertheless, the fact that the government was willing to show their support for the industry comforted investors. This was particularly true for multinationals for whom Brexit was a concern.

37. Brexit, Covid-19 and the recession prior to those were often mentioned as barriers or challenges. Additionally, the time horizon for many of the projects had not been reached, and the full impact had not been realised.

38. All interviewees agreed that the administration of the AMSCI project was a considerable task, especially putting applications together. In all cases, they were very satisfied with Finance Birmingham's support for the parts they found more difficult to navigate.

Beneficiary Survey

39. Between September and October 2021, a quantitative telephone survey of 72 AMSCI beneficiaries was conducted. The purpose of the survey was to explore businesses' motivations for applying for the funding and the impact it has had on their business.

40. Businesses which responded to the survey covered all regions in England, though the largest share of respondents was based in the West Midlands (27%). The majority of programme beneficiaries were in the Manufacturing sector (80%) and were small, with 59% of them based at a single site, 10% were a branch of a UK organisation and just over a quarter (27%) were a branch of an international organisation.

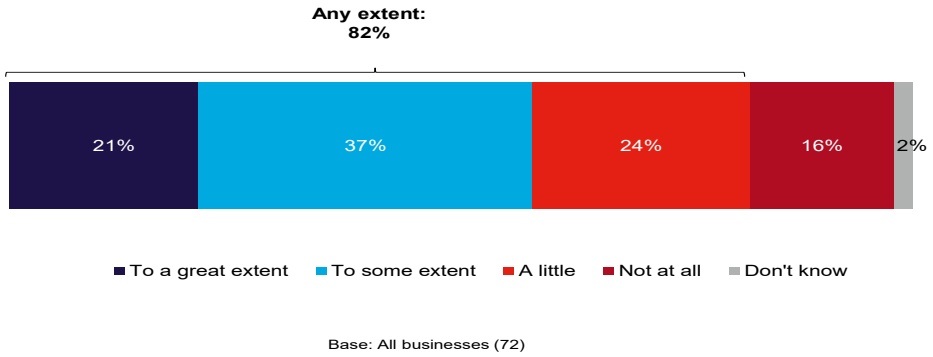
Use of funding

41. Questions covered what the funding was primarily for, with just under half of beneficiaries (48%) identifying introducing new or significantly improved processes for producing or supplying goods or services. Funding was for new or significantly improved goods (46%) or services (5%).

42. Programme beneficiaries were asked how likely they think it is that their business would have been able to receive the same level of assistance elsewhere, without the AMSIC funding. The majority of businesses (82%) felt that it was unlikely, with 30% feeling that it was not at all likely that they would have been able to receive the same level of assistance

43. Four in five programme beneficiaries (82%) reported that the project positively impacted on their turnover at least a little. One in five beneficiaries (21%) reported that the project positively impacted on their turnover to a great extent.

"To what extent do you feel the AMSCI/NATEP project positively impacted on the turnover of your business, if at all?"



Base: All businesses (72)

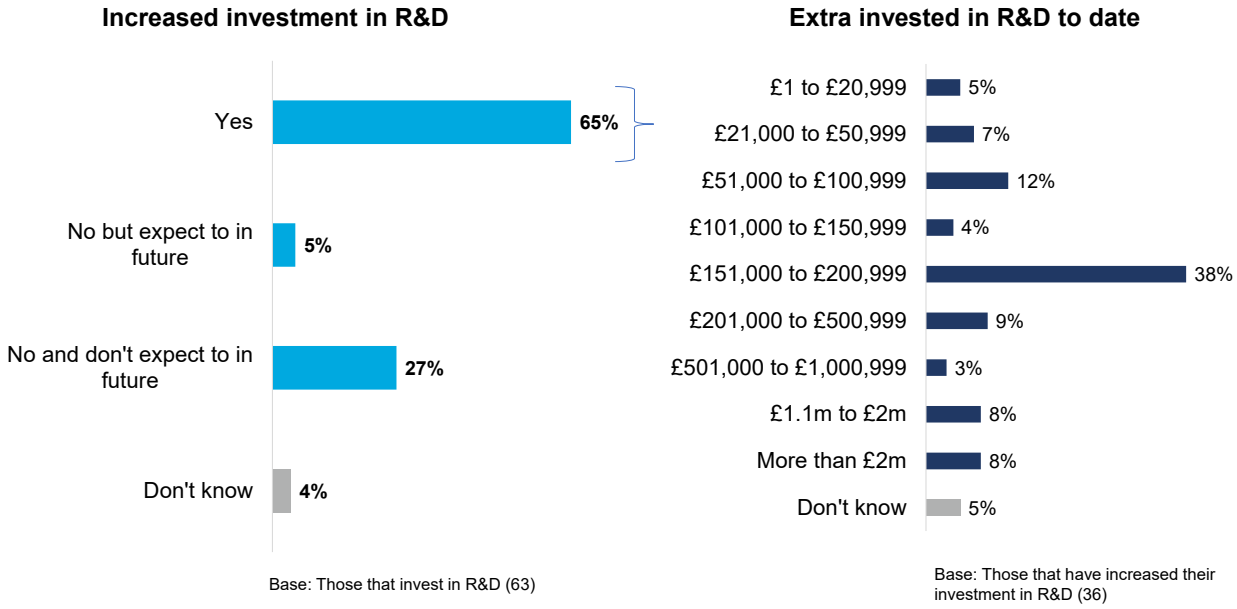
Innovation impacts

44. The survey complements some of the quantitative evidence and case studies around beneficiaries viewing support improving business innovation capacity. Almost two thirds of businesses (64%) said that they had improved their innovation capacity, with a further 2% saying that they expected to in the future. Statements about the nature of this improvement and the vast majority of beneficiaries felt that the project had also encouraged technology development at least a little (90%), with 36% reporting that it was encouraged to a great extent.

45. Beneficiaries were also asked what the total sales from the new products and services had been to date. Just over a third of businesses (35%) reported total sales of £51,000 to £100,999. Just over one in four (27%) reported no sales to date. It should be noted that a significant minority (16%) did not know what their total sales had been to date.

46. The vast majority of programme beneficiaries said that their business invests in R&D (91%). Beneficiaries were subsequently asked if their business had increased investment in R&D as a result of receiving the AMSCI / NATEP funding. Two thirds (65%) said they had increased investment in R&D and a further 5% said they expect to in future. Most businesses that had increased investment in R&D had invested up to £201,000, most typically £151,000 to £200,999 (38%).

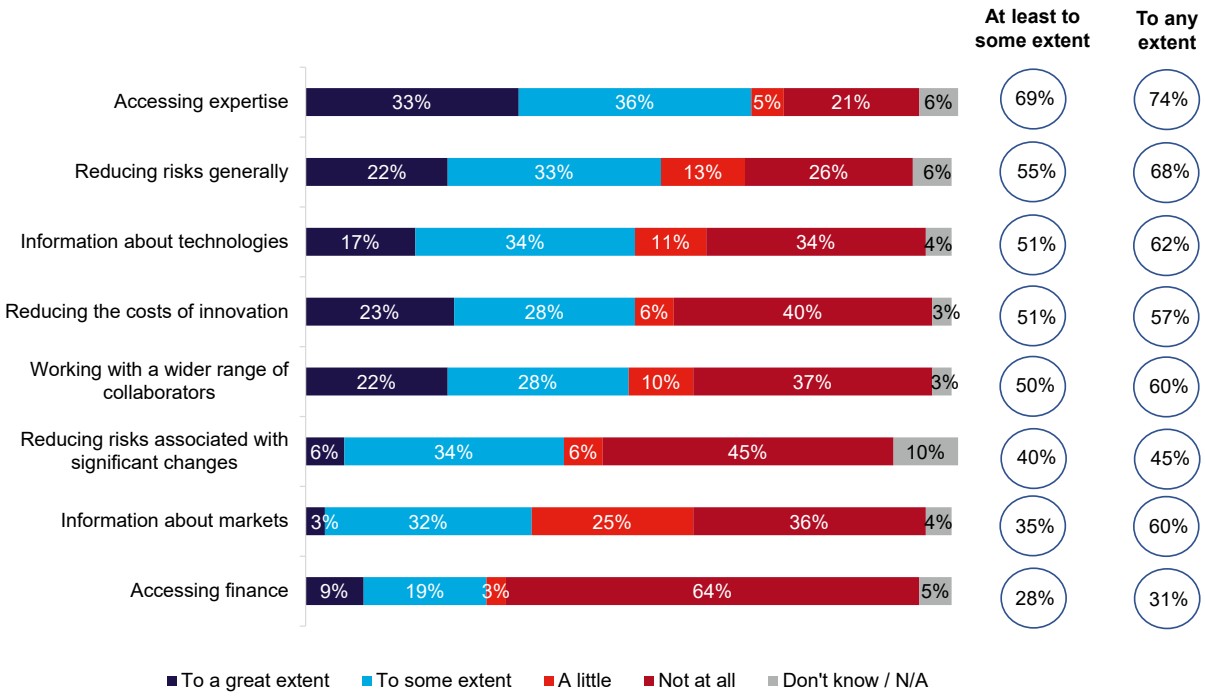
“As a result of receiving the AMSCI/NATEP funding, has your business increased investment in R&D?”



Supply chain impacts

47. AMSCI support was for a supply chain and respondents were asked to score statements about the extent to which the project has strengthened their supply chain in terms of the different aspects.

"To what extent has the project strengthened the supply chain in terms of ..."



Base: All businesses (72)

48. These were split into reducing risks generally, reducing the risks associated with significant changes, reducing the costs of innovation, accessing finance, accessing expertise, information about markets, information about markets, working with a wider range of collaborators. The most prevalent reason for the strengthening of the supply chain – in terms of contributing at least to some extent - was the access to expertise, followed by reducing risks generally and information about technologies. The least impactful factors were reducing risks related to significant changes (eg. C19 and the outcome of the EU referendum), information about markets and accessing finance.

Concluding remarks

49. The AMSCI programme has supported advanced manufacturing supply chains to boost competitiveness. Through the £276m grant funding, the programme has led to the creation of 23,572 additional years of employment as well as strong turnover growth for the supported businesses. These businesses also report a positive impact on earnings and the quality of jobs, highlighted through the significant wage premium and larger share of employees in full-time employment.

50. The econometric results were difficult to estimate robustly. This is due to the complexity of the support: it supports both primes in the supply chain and the supply chain, large businesses as well as small, and the support had been over several years. However, the broad thrust of the findings – that the businesses seen a rise in economic activity which is higher than comparable businesses – is confirmed in other evidence.

51. The survey indicates the businesses regard the AMSCI support as strengthening supply chains, reducing risks and widening information about technologies.

References

Aghion, P., Bergeaud, A., Blundell, R., & Griffith, R. (2018). The innovation premium to low-skill jobs. *Working paper*. Available at: https://www.bancaditalia.it/pubblicazioni/altri-atti-convegni/2018-labour-market-participation/Bergeaud_Paper.pdf.

BIS (2015) Advanced Manufacturing Supply Chain Initiative (AMSCI): Early Additionality Study. November

BIS (2014). Regional Growth Fund: Impact and Economic Evaluation Options, July. *BIS Working Paper.*

Caliendo, M., and S. Kopeinig (2005). Some practical guidance for the implementation of propensity score matching. *IZA Discussion Paper*, no. 1588.

D'Costa, S., & Overman, H.G. (2014). The urban wage growth premium: Sorting or learning? *Regional Science and Urban Economics*, 48, 168-179.

Gibbons, S., Overman, H.G., & Pelkonen, P. (2014). Area disparities in Britain: Understanding the contribution of people vs. place through variance decomposition. *Oxford Bulletin of Economics and Statistics*, 76, 5, 745-763.

Gibbons, S., H. Overman and M. Sarvimaki (2017) "The Local Economic Impacts of Regeneration Projects: Evidence from the UK's Single Regeneration Budget." *SERC Discussion Paper 218*. LSE Spatial Economic Research Centre.

HC (2016) House of Commons, Briefing Paper Number CBP5874, 2 November 2016.

Heckman, J., R. LaLonde, and J. Smith (1999). The economics and econometrics of active labor market programs, in *Handbook of Labor Economics Vol.III*, ed. by O. Ashenfelter, and D. Card, pp. 1865–2097. Amsterdam, NL: Elsevier.

Mayer, T., F. Mayneris and L. Py (2017) "The impact of Urban Enterprise Zones on establishment location decisions and labor market outcomes: evidence from France" *Journal of Economic Geography*, 17(4):709-752.

Moffat, J. (2013). Regional selective assistance in Scotland: Does it make a difference to plant survival? *Regional Studies,* no. 49, vol. 4, pp. 568-581.

NAO (2014) Progress Report on the Regional Growth Fund. URL: https://www.nao.org.uk/wp-content/uploads/2015/02/Progress-report-on-the-regional-growth-fund.pdf

Riegler, R. (2012). *Fragmentation and integration: New evidence on the organisational structure of UK firms*. PhD Dissertation, University of Nottingham.

Rosenbaum, P.R. (2002). *Observational studies*, 2nd ed. New York, NY: Springer-Verlag.

Song, J., Price, D.J., Guven, F., Bloom, N., & von Wachter, T. (2015). Firming up inequality. *NBER Working Paper* no. 21199.

Annex

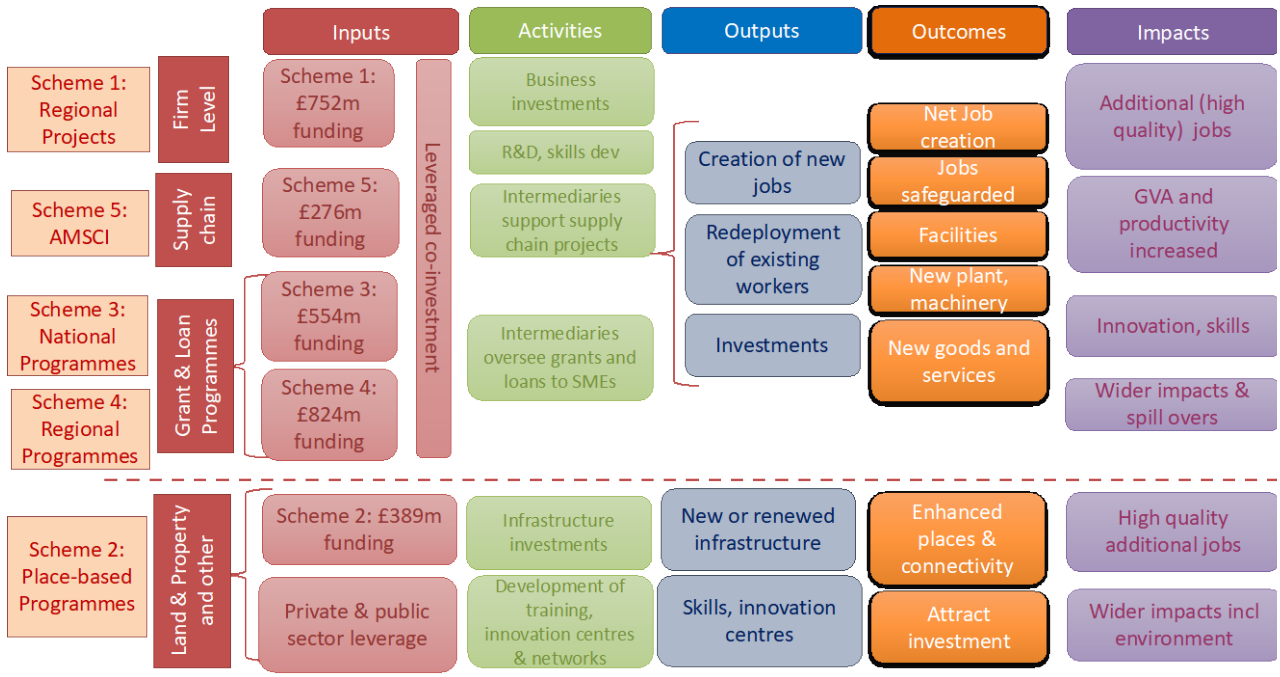
1. This study uses a mixed methods approach, and this annex describes the different methods employed. The choice of methods was linked to the logic models for the different RGF interventions and the annex first considers this.

Regional Growth Fund Logic Model

2. This study has benefitted from a scoping study undertaken by Ipsos MORI and partners which reviewed the logic models for the RGF and then set out the methods and datasets that may be used to evaluate the Fund (BIS, 2016). This did not cover AMSCI, but BIS (2015) offered an insight into the logic of Scheme 5.

3. BIS (2016) look at the Fund from the perspective of three types of support, broadly one where the Fund directly supported businesses. This mapped to Scheme 1, Regional Projects. A second where the intervention is area-based, provides a logic model appliable to Scheme 2, Place-Based Programmes; and thirdly where an intermediary delivery body provides grants and loans to small and medium-sized enterprises, which maps to Schemes 3 and 4. Then BIS (2016) looks at Scheme 5, AMSCI.

Figure A1: Logic models of the RGF Schemes



4. Figure A1 is derived from these studies, looking at how RGF financial inputs plus the private and public sector inputs then lead to a range of activities and outputs. These then in turn lead to the RGF outcomes and impacts. Key to the scoping work was the distinction between the direct effects (as BEIS and DLUHC supported businesses often through intermediaries) and indirect effects of RGF investment in places. In the latter, through unlocking areas for commercial development or making places more attractive or through funding a facility for innovation or skills, business outcomes and impacts were delivered indirectly without the RGF providing support into specific businesses.

5. The figure indicates this distinction. The outputs were generally investments in businesses that resulted in employment for Schemes 1, 3-5. The impacts would then be the additional employment, and the quality of the jobs. There are then a wider range of additional impacts for businesses. In terms of evaluation approaches, BIS (2015) highlights how econometric analysis of firm-level data, business beneficiary surveys as well as some qualitative understanding would be appropriate.

6. The methodological approach differed for Scheme 2. This scheme has indirect effects on businesses and wider impacts on places. BIS (2014) suggested quantitative analysis at an area level could provide evidence about the indirect impacts, but also noted how in-depth qualitative case studies was the most likely method to deliver evidence across the impacts of Place-Based Programmes.

Approach using firm-level analysis

7. To select comparable businesses, propensity score matching (PSM) is used. Caliendo and Kopeinig (2005) provides an overview of the approach.

8. Initially, successful and unsuccessful businesses are matched on observable characteristics and the probability of receiving support from the RGF using a Probit model. Through propensity score matching, the counterfactual group is created which will be used to compute the casual impact of the RGF funding. Table A1 indicates variables used in the modelling and the results from the 2012 cohorts of the RGF National and Regional Programmes.

9. The preferred counterfactual was determined in terms of the pool from which comparable businesses was selected (unsuccessful applicants were used as a counterfactual as opposed to wider BSD for three of the four schemes where support is firm-level) and the variables used in the propensity score (the preferred model was one that included past support received by the business). Matching with replacement is used as the unsuccessful applicant pool as it is smaller in size to the supported group of businesses, meaning an unsupported business from the match pool can be the “nearest neighbour” match for multiple treated businesses (Rosenbaum, 2002). An example model of estimates of factors leading to selection into an RGF programme is in Table A1.

10. The probit models what characteristics of a business determine the probability that the business receives support by RGF. The explanatory variables are real turnover, whether in a low paying [11], manufacturing [12] or high-tech [13] sectors, firm age, number of local units, the Herfindahl Index [14], public sector employment and population density (at the LEP level), the number of non-RGF support and real value of that support (see Table A2). The dependent variable is binary that takes the value of one for the business that receives support and is zero otherwise.

Table A1: Probit model of RGF National and Regional Programme selection in 2012

	Scheme 3: National Programmes			**Scheme 4: Regional Programmes**		
Match pool	**Unsuccessful Applicants**		**BSD**	**Unsuccessful Applicants**		**BSD**
Model specification	**Mod I**	Mod II	**Mod I**	**Mod I**	Mod II	**Mod I**
Age	0.04 (4.04***)	0.04 (4.38***)	0.00 (0.61)	-0.01 (-0.85)	-0.01 (-0.83)	-0.02 (-3.23***)
Age squared	0.00 (-3.35***)	0.00 (-3.63***)	0.00 (-1.42)	0.00 (0.78)	0.00 (0.75)	0.00 (2.25**)
Live units in enterprise	0.00 (-1.23)	0.00 (-1.24)	0.00 (-1.74)	0.00 (0.38)	0.00 (0.30)	0.00 (-0.43)
UK owned	0.27 (3.69***)	0.26 (3.60***)	0.26 (7.11***)	-0.04 (-0.42)	-0.05 (-0.44)	0.01 (0.16)
High technology industry (=1)	-0.22 (-3.29***)	-0.19 (-2.74***)	-0.02 (-0.49)	0.15 (1.57)	0.10 (1.05)	0.22 (4.43***)
Manufacturing industry (=1)	0.53 (8.69***)	0.60 (9.56***)	0.66 (22.11***)	0.22 (2.45**)	0.17 (1.79)	0.44 (8.86***)
Low paid industry (=1)	-0.07 (-0.93)	-0.08 (-1.05)	-0.26 (-7.62***)	0.02 (0.17)	0.03 (0.33)	-0.16 (-3.00***)
Hirfindhal index	-0.07 (-0.93)	-0.04 (-0.61)	0.01 (0.29)	-0.14 (-1.07)	-0.17 (-1.27)	-0.03 (-0.45)
Public sector emp LEP	-0.12 (-7.76***)	-0.12 (-7.60***)	0.01 (1.61)	0.06 (1.97**)	0.06 (1.93)	0.08 (5.72***)
Popn density LEP	-0.18 (-4.60***)	-0.19 (-4.66***)	-0.02 (-1.15)	-0.28 (-4.24***)	-0.28 (-4.13***)	-0.10 (-3.58***)
Gvt support before		-0.23 (-5.57***)			0.15 (2.87***)	
Value of support before		0.51 (4.71***)			0.07 (0.48)	
Constant	1.63 (4.47***)	1.58 (4.32***)	-3.34 (-18.8***)	-2.52 (-3.85***)	-2.57 (-3.90***)	-3.93 (-12.5***)
Pseudo R2	0.13	0.14	0.13	0.18	0.18	0.14
Observations	2,727	2,727	190,309	2,096	2,096	187,722

11. The modelling indicates that size, whether a business is in manufacturing and being a recipient of other support, are all positively correlated with being supported by RGF. The last variable, receipt of other government support, was prepared for the study by linking to

[11] Classified as Textiles, clothing, SIC07 13 and 14; Retail, SIC07 45, 47, 77.22 and 95.2; Hospitality, SIC07 55 and 56; Security, SIC07 80.1; Cleaning, SIC07 81.2 and 96.01; Social care, SIC07 87, 88.1, and 86.10/2; Hairdressing, SIC07 96.02 and 96.04; Agriculture, SIC07 1 and 3; Food processing, SIC07 10; Food processing, SIC07 10; Leisure/Travel/Sport, SIC07 59.14, 92 and 93; Employment agencies, SIC07 78.10/9 and 78.2; Childcare, SIC2 85.1 and 88.91.

[12] Classified as Manufacturing, Companies House SIC07 10110/33200 (all).

[13] Classified as Energy, SIC03 11.1 and 11.2; Electronic publishing, SIC03 22.1 and 22.3; Life Sciences, SIC03 24.4 and 33.1; Composites and other advanced materials, SIC03 25.24, 26.15 and 26.82; Precision Engineering and precision components, SIC03 28.52); Machinery and Equipment not classified elsewhere, SIC03 29 (all); Computer equipment & office machinery, SIC03 30.01 and 30.02; Electrical equipment, SIC03 31.1, 31.2, 31.4 and 31.62; Electronic equipment & components , SIC03 32.1, 32.2, and 32.; Medical & surgical equipment, SIC03 33.1, 33.2, 33.3 and 33.4; Transport Equipment, SIC03 34.10 and 34.3; Aerospace & related activities, SIC03 35.3; Manufacture of Games and Toys High-Tech Service Activities, SIC03 36.5; Telecommunications, SIC03 64.2 Software development & consultancy, SIC03 72.2; Web/internet services, SIC03 72.6; Other computer, SIC03 72.1, 72.3, 72.4, 72.5, and 72.6; R&D (natural sciences & engineering), SIC03 73.1; Architectural & engineering activities, SIC03 74.2; Technical testing & analysis, SIC03 74.3; Security and related activities, SIC03 74.6.

[14] Herfindahl index of market concentration 2007 (based on sales per 2-digit SIC sector).

the BSD a database of Innovate UK, Department of International Trade and other smaller support measures.

Table A2: Selection Modelling Variables

Variable	Definition	Source
RGF	Dummy variable indicating whether a firm received RGF support	RGF management information
No. of non-RGF interventions	Number of non-RGF public support business has received covering Innovate UK, Department of International Trade and some smaller support measures.	Interventions Database
Real total amount of non-RGF support	The deflated value of non-RGF public support business has received	Interventions Database, ONS two-digit SIC (2007) GVA estimates
Real turnover	Deflated turnover	BSD and ONS two-digit SIC (2007) GVA estimates
Employees	Number of employees excluding proprietors	BSD
Age	Baseline Age of firm (years)	BSD
Age squared	Baseline Age of firm squared	BSD
No. of local units	Number of plants owned by the enterprise	BSD
UK ownership	Dummy variable indicating whether the firm is owned by a UK enterprise	BSD
Labour productivity	Real turnover per employee	BSD and ONS two-digit SIC (2007) GVA estimates
HH Index	Herfindahl Index of industry concentration (two-digit SIC)	BSD
Public sector employment (%)	Percentage of jobs that are public sector in each LEP area	LEP data
Population density	Number of people in an LEP area	LEP data
Industry-dummies included	Companies House SIC 2007 industries (see Annexes)	BSD

12. It is important to check the matching quality. Checks firstly look at the average characteristics of the supported businesses and the selected control businesses. There are statistical tests to confirm that the two groups are similar. The attention then turns to whether individual businesses are matched to appropriate unsupported businesses in terms of the propensity score. A focus is whether there is an overlap or ‘common support’ region. The intuition behind this is that firms with the same characteristics should have a positive probability of being both a beneficiary and non-beneficiary. The matching is considered unsuccessful if this is not the case (Heckman, LaLonde, and Smith, 1999).

13. The most straightforward way to check this is a visual analysis of the distribution of the propensity score in both groups and whether the range of propensity scores seen in the supported group is replicated in the counterfactual. A second test was done to address how sensitive the overall results are to the possibility that some aspect of the selection process has been missed. These tests model how the amount of bias that would be needed to make estimates insignificant.

14. Propensity score matching controls for observable characteristics which may also affect the performance outcomes analysed in this report (i.e. employment, turnover and productivity). However, on its own it is a cross-sectional estimator and thus only compares firms at one point in time. If unobservable characteristics such as intra-firm products/processes and skills of the workforce etc. are important determinants of firm performance outcomes, then the propensity score matching will erroneously attribute RGF support to all the growth witnessed in the performance outcomes of interest.

15. As a result, difference-in-differences is combined with propensity score matching, so that the time dimension of the BSD data is exploited. This allows unobservable variables which affect performance outcomes in a way constant over time to be cancelled out and thus controlled for. The key assumption for difference-in-differences is performance outcomes in supported and control businesses would follow the same time trend in the absence of the intervention. The benefit of combining propensity score matching with difference-in-differences is similar businesses, based on their propensity score, are more likely to exhibit similar trends. This assumption is difficult to verify but pre-treatment data is tested that the trends are broadly the same before support takes place.

Measuring the employment and turnover impacts

16. This interim evaluation presents results on productivity and output change attributable to the RGF. A focus is employment and the total number of jobs created or safeguarded. An additionality ratio is calculated assessing the proportion of the job growth that may be additional.

17. The main metric for job creation throughout the study is ‘job years’: one job for one year is one job year. Because many official annual employment estimates are taken in September, job years start and end in that month. This metric departs from looking at a single point in time after an intervention, allowing an estimate of any cumulative impact on employment. For example, if in the short-term an intervention causes employment growth in supported businesses, but then comparable unsupported businesses catch up, the measure will capture that initial difference in employment. The treated period is placed when the subsidized investment becomes operational, and therefore uses the GOL agreement as point of treatment since this is closely related with the drawdown of grant funding and forecast employment impacts.

18. Estimation is undertaken in several stages, using a step-by-step approach to calculate impact in terms of job years for up to four “windows” of growth. Each includes the

growth from the previous “window” so the approach accumulates additional employment to get the total number of additional job years, summing across the growth windows.

19. A first analysis is to estimate gross employment change in businesses, tracking the employment of supported businesses each year in the Business Structures Database (BSD). For the smaller businesses the gross employment change was relatively easy to track, as employment is recorded each year for each business in the BSD. This annex breaks down how gross job years were calculated in RGF Projects.

Table A3: Calculation of Gross Jobs in RGF Projects

First support		**Reporting unit employment**				
Year	Units	t	t+1	t+2	t+3	t+4
2011	36	12,829	11,255	12,457	13,644	13,252
2012	68	56,345	57,940	60,583	63,657	62,314
2013	68	56,378	54,519	55,253	56,942	58,357
2014	24	28,799	34,766	37,735	38,750	38,587
2015/16	23	5,874	6,345	7,328	7,923	7,461
		Change in jobs from year before support				
Year	Units	Total	t+1	t+2	t+3	t+4
2011	36	-708	-1,574	-372	815	423
2012	68	19,114	1,595	4,238	7,312	5,969
2013	68	-441	-1,859	-1,125	564	1,979
2014	24	34,642	5,967	8,936	9,951	9,788
2015/16	23	5,046	983	1578	898	1587
Job years		57,653				

20. The RGF Projects have provided funding to large businesses, and the businesses are often complex in their structure, frequently having multiple plants. So, the analysis must understand which units are being supported by RGF and differentiate these units from the enterprise’s other plants and establishments.

21. The ONS reporting unit measure of employment is the preferred measure to estimate gross employment change. It is based on survey returns by enterprises about employment at an individual plant. To calculate these estimates the ONS local units have been linked to the RGF management information about supported businesses. Plants were identified by local units that shared the first four letters of the postcode of the RGF address. Then the employment change has been estimated and this is used for the estimate of the gross jobs created in supported businesses.

22. For the 261 Regional RGF projects, as outlined in the report, the employment in each supported plant has to be identified in the plant level BSD. Some businesses had received support more than once and then would only be included once and from the year

they had received RGF project support (first payment). Table A3 indicates gross employment results for these RGF project beneficiaries. The top half focuses on the 219 businesses where an employment estimate is available for each year 2010-2017 in the BSD for the business, with the lower then looking at the change in the number of jobs since the year before support, e.g. 2012 for those businesses first treated in 2013.

23. Table A4 then looks at how estimates of the additional job years has been calculated. This is relatively simple, in that growth in the supported firms has been estimated and then compared to growth in businesses identified as potential comparators. Many different models have been run and the table focuses on four.

Table A4: Estimates of jobs created for RGF project beneficiaries

Model used	Net additional job years created	Gross job years created from treatment	Additionality ratio	2yr Growth in Treated	Difference-in-Difference	t-stat
Scheme 1: Regional Projects						
Preferred model	49,417		86%		12.0%	3.25***
Model I	45,299	57,653	79%	14%	11.0%	3.37***
Model II	16,472		29%		4.0%	1.37

$$\text{Net additional job years created} = \text{Gross job years created} * \frac{Treatment\ effect\ (ATT)}{\text{Growth rate in treated group}}$$

Note: Table reports the net total number of jobs created from treatment-year to 2014. Additionally ratio is calculated as the ATT-estimate divided by the growth rate in the treated group. T-stat for ATT from PSM analysis listed. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels.

24. The calculations for RGF Programmes and AMSCI are detailed in the accompanying report “Evidence from Econometric Analysis.”

Firm survival impacts

25. For the programmes, the support provided to businesses affects their chance of survival. This differential survival rate could result in additional economic activity, occurring due to the support resulting in fewer businesses closing than otherwise would be the case.

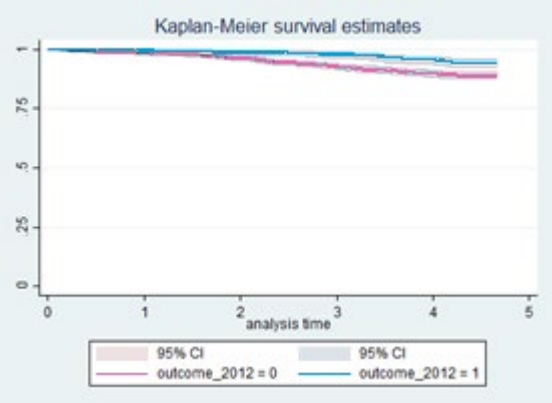
26. The variation in the survival rates of the samples of businesses that are supported each year is likely to be due to the characteristics of the supported businesses differing from the wider BSD. So, as the businesses that RGF programmes support are larger or older than the wider BSD, their survival is likely to be higher than the wider BSD and these determine survival rates.

27. To control for this, the Box-Cox approach was used to model survival rates for the supported businesses, the wider BSD and the matched businesses. The approach is based on other studies (e.g. Moffat, 2013). The survival functions for the supported businesses and matched controls are presented in Figure A1 for the 2013 National and Regional Programme beneficiaries. The survival rates of businesses each year after

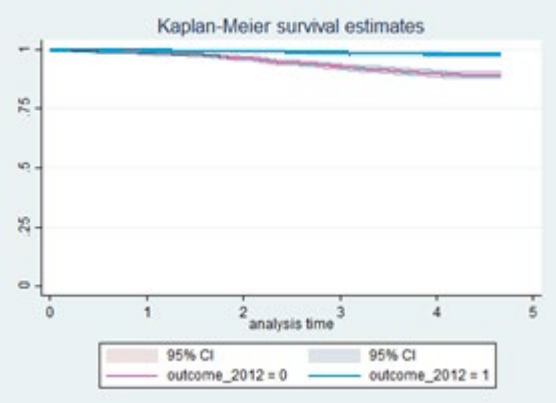
support is plotted and – as expected – exhibits a fall as the graph moves to more recent years, reflecting that a share of businesses is likely to close each year.

28. On the left panel, the survival rates for the unsupported, matched businesses are the lower line. Around the line are confidence levels, indicating how the survival rates are significantly lower than the survival rates for the supported businesses under scheme 3, with this indicated by the confidence intervals for the matched group not overlapping and being below the supported ones.

Figure A1: Business Survival Functions for programme supported in 2013



Scheme 3: National Programmes



Scheme 4: Regional Programmes

29. On the right-hand side is the survival rate estimated for the supported businesses and the matched counterfactual, for scheme 4, the Regional Programmes. The matched control group is less likely to survive at each year following support.

30. A second analysis has then been performed to understand the impact on job years as survival has been impacted by support. The effect can be ambiguous. On the positive side is the higher chance of a business surviving, resulting in job years increase. This is the case in 2012 for Scheme 4 (18 job years) and in 2013 for Scheme 4 (1,494 job years). However, if supported businesses are larger than the matched control group even after matching, then there is a negative job years impact because some businesses closed despite receiving support and were large. In 2012, this offsets Scheme 4's survival premium and 256 job years were lost despite support so that overall 238 job years were lost rather than survival increasing the additional jobs. For the following year, however, this is not the case. Supported businesses are larger, but overall, the higher survival rate means 774 additional job years.

Earnings impacts and the quality of jobs

31. Workers are said to earn a "wage premium" if their wage is higher than it would be in a different business or occupation, given their ability, skills and experience. A premium may arise if the worker is more productive, and the higher wage reflects this. To estimate

the impact of RGF support, wage premiums can be estimated. There is ample evidence that firm heterogeneity plays an important role in explaining differences in wages across firms, i.e. workers that look similar on paper earn significantly different wages depending on the firm they work for (Song et al., 2015). In a recent paper, Aghion et al. (2018) point to a significant wage premium that grows with the R&D intensity of a business.

32. Aghion et al. (2018) use the Annual Survey of Hours and Earnings (ASHE) combined with the Business Enterprise Research and Development Survey (BERD) to estimate the wage premium of R&D intensity, defined as log research spending divided by employment. As most data is available for larger businesses, they only include businesses with more than 400 employees. They find a clear positive relationship between R&D intensity and average wages. When looking at different skill levels, the relationship becomes stronger when looking at the low-skilled. Moreover, these findings hold when controlling for an individual's age, tenure, and full-time/part-time status, as well as firm size.

33. A similar methodology can be applied to estimate whether RGF supported businesses pay wage premiums after receiving support. Supported businesses can be compared to a suitable control group, identified using PSM. By comparing wage differences before and after support, it can be identified whether a wage premium has arisen or grown.

34. The main source of data used in the approaches to estimate wage premiums is the Annual Survey of Hours and Earnings (ASHE). This is the Office for National Statistics' (ONS) principal source for earnings estimates, collected in April of each year, and uses data on about 120,000 full-time employees.

35. The sample selection is based on the National Insurance identifier, selecting all jobs held by one per cent of all NI numbers. HM Revenue and Customs shares with ONS the employer details for these jobs and ONS then asks the employers to fill out an ASHE record for each person identified. All the largest employers will be surveyed, and about 1% of their employees will be recorded in ASHE. ASHE excludes serving members of the Armed Forces. Outside of that, the main category of employees that would not be included, part-time and/or low-paid employees who fall below National Insurance thresholds, should be less important for this work, as innovating firms tend to pay relatively high wages.

36. As the primary source of data is ASHE, there is a choice of the earnings measure. This study uses weekly earnings (including overtime) for employees. By linking the ASHE responses to other business surveys, a wider set of variables about the employer becomes available.

37. There are several avenues in which to analyse the data. They all rely on comparing wages before and after support, and against the control group defined using PSM.

38. Average wages per firm can be computed each year. Even if individual workers join and leave a company, average wages can be calculated in a pseudo-panel, and as far as possible, changes in workforce characteristics can be accounted for. Wage growth in supported firms can then be compared against wage growth in matched unsupported firms.

39. However, changes in the workforce may be an outcome of support itself. For example, a firm may hire more scientists or engineers to perform the R&D they have been awarded funding for. In that instance, the causal effect of the support may be less clear: does the support have an independent effect on productivity, or does it only come about because of the new hires? Without support, those workers may have never been hired in the first place, so this would just be another channel through which support may have an effect.

40. Another possibility is to compare only wages of those who stay with one firm during the whole period, before and after support. This makes it possible to measure the effect of innovation support on the productivity of individual workers. Worker fixed effects can be used to control for individual characteristics that are stable over time, and comparison against the matched control group controls for general wage growth, e.g. due to experience and seniority.

41. Lastly, a treatment effect can be identified from job switchers. Those are people joining the successful firm receiving RGF funding around the time of the treatment. Wage growth of switchers to treated firms, higher than that of switchers to non-treated firms, would indicate that treatment has a positive effect on earnings, even controlling for the fact that some workers may have been specifically hired in response to the support.

Surveys of Programme Beneficiaries and Unsuccessful Applicants

42. This element of the evaluation was a rolling telephone survey of 1,700 beneficiaries, commencing in September 2015 until December 2017. This telephone survey was supplemented by an online datasheet capturing more in-depth numeric information on beneficiaries' experiences of the RGF. On top of interviews with beneficiaries, a telephone survey of 500 businesses who unsuccessfully applied for support through the RGF programme (named 'unsuccessful applicants'), to compare their experiences since applying with those who were successful (the beneficiaries).

43. For sampling, in May 2015, a file of all businesses which had received support through an RGF programme up to that time was collected by the study. This contained around 5,000 beneficiaries, with the vast majority having received funding from Rounds 1 and 2 of the RGF. The next sample file – containing details of beneficiaries who received support as part of Rounds 3 to 6 of the RGF – became available by late 2016.

44. There were some limitations to the details available, such as for around 900 beneficiaries there was no information on their grant application date or confirmation of grant offer (see paragraph below for reason this is required). Further data collection by the study team was undertaken, returning to a number of programme intermediaries requesting them to provide the information where this was missing. For the most part, this proved successful and the majority of the information needed was obtained.

45. Beneficiaries were deemed eligible for the survey once three years had passed following the agreement of their Final Grant Offer Letter (FGOL) for RGF support. As support was provided over several years, beneficiaries became eligible for interviewing when this three-year mark was reached. For the unsuccessful applicants' survey, 1,093 were considered in scope. These applicants all *applied* for RGF support a minimum of three years prior to the survey window.

Surveys of AMSCI Beneficiaries

46. During 2021, a survey was undertaken with beneficiaries of the following two programmes that were run as part of the RGF:

- The Advanced Manufacturing Supply Chain Initiative (AMSCI): a funding competition designed to improve the global competitiveness of UK advanced manufacturing supply chains. Funding was available to support research and development, skills training and capital investment to help UK supply chains achieve world-class standards and encourage major new suppliers to locate in the UK.
- The National Aerospace Technology Exploitation Programme (NATEP): a £15m programme to develop 60 aerospace technologies in the UK aerospace supply chain.

47. Between September and October 2021, IFF Research conducted a quantitative telephone survey of 43 AMSCI beneficiaries and 29 NATEP beneficiaries. The purpose of the survey was to explore businesses' motivations for applying for the funding and the impact it has had on their business.

48. Interviews were conducted using Computer Aided Telephone Interviewing (CATI) software and lasted 24 minutes on average. The data has been weighted by programme type and business size to represent the profile of beneficiaries.

49. Due to the low base sizes, the findings have been reported at an overall level. There are no statistically significant differences between the two programmes.

Case Studies of Regional Projects

50. There were 258 RGF Regional Projects and 10 were interviewed for case studies. Each interview provided qualitative evidence and information in order to contextualise findings on employment, turnover, productivity, and wage premiums derived from the econometric analysis.

51. Fieldwork was conducted in 2019. The interviews were designed around the intervention logic, and the sample revealed three broad logic models; build and the resulting sample comprised three broad logic models; building or refurbishing production plant, investing in Research & Development, or investing directly in a bespoke process or product development.

52. The case studies were sampled to over-select larger projects and cover a cross-section of sectors and regions. A longlist was collated through a combination of management information analysis and purposive sampling based on the following principles:

- Over-sampling large projects (in terms of grant size) to ensure coverage of as much of RGF expenditure as possible.
- Seeking to be relatively representative in terms of region and sector.
- Focus on businesses, excluding those led by government bodies, such as local authorities.
- Focus on ‘green’ risk status cases.

53. In terms of grant size, the sample drew primarily from 75% percentile and above. Smaller cases were taken from the 50% percentile to improve regional and sector coverage. The bulk of the projects (27) were in manufacturing. Out of the remaining three, two were in services and one is classified as ‘skills’. Within manufacturing there was a focus on Automobile manufacturing (12 projects). The remaining 15 were evenly spread across Aero, Chemical, Electronics, Food, Low Carbon/Renewables/Energy, Materials/Chemicals/Pharma, Transport/Telecoms/Utilities, and ‘General’. Location focus was the North, and the West Midlands, though other regions were also in sample.

54. Following finalising of the shortlist, Monitoring Officers were contacted to confirm details and advice on feasibility. Interviews were arranged with identified project leads. The interviewees were key personnel in finance and project management involved in delivering the projects. The interviews were semi-structured, using a topic guide based on the logic models.

55. The interviews did not quantify or assess additionality or deadweight and focused on better understanding the rationale of larger, often multinational, companies applying for public funding. Emphasis was put on probing the assumptions and thinking around employment and productivity and longer-term impacts on ability to attract investment and projects in the future.

56. The interview data was anonymised and collated using an analytical framework that coded comments by topic, breaking down interviewee's responses into main categories and subcategories. This approach allowed consistent analysis across case. The categories employed are listed in Table A5 below.

Table A5: Analytical Framework

Main Category	*Goals, Aims and Activities*	*Bid and Project Design*	*Outputs and Impacts*	*Future Plans and Concluding Questions*
Sub-Categories	Role & Involvement	Rationale for applying	Delivery of expected outputs	Anticipated future plans
	Goals and Aims of Project	Inception/Development of bid	Main benefits	Key issues
	Fit with wider goals and government support	Key Decisions made	Operating Model	Issues & Lessons Learned
		Job Projections	Wider impacts	AoB
		Co-Investment	Long-term ability to receive more funding / develop / manufacture more products	
		Other options considered	Wider benefits to UK industry	
		Realising goals without RGF		

Approach for place-based interventions

57. To evaluate the impact of the larger scale, multi-beneficiary interventions with an area focus a case study approach has been adopted. This involves the detailed study of 16 different interventions – spread across England and from different rounds of RGF. A similar approach was also used for one RGF National Programme (see chapter 4).

58. For the place-based interventions, the final sample consists of six transport projects/programmes, three multiple occupancy commercial or industrial projects/programmes, five spatial projects/programmes, one environmental project and one housing project. Table A6 summarises the 17 RGF Place-Based Programmes case studies. (The Wave 2 Growth Hub programme case study was conducted alongside these 16 studies, but this programme was a National Programme). Eight of the selected case studies are Round 2 projects/programmes (when the largest proportion of RGF was awarded), three are Round 1, three from Round 3, and two from Round 4.

59. The 16 place-based interventions varied considerably in scale. For instance, the Revolving Infrastructure Fund, which is designed to enable infrastructure development across the West of England, has RGF funding of nearly £40m and is expected to create over 10,700 jobs. Smaller initiatives had budgets below £10m and more modest targets for

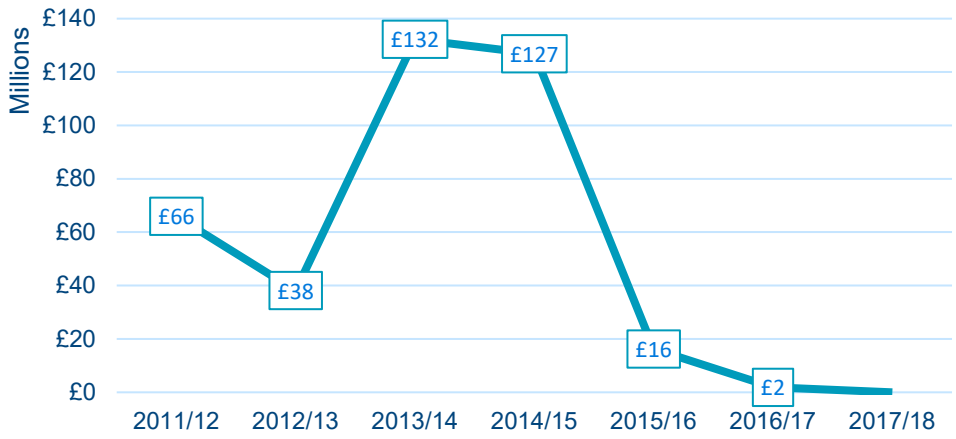
job creation/safeguarding. Alongside the creation/safeguarding of jobs, other economic and social benefits were expected to flow as a result of the investment.

60. A case study approach has been adopted that combines the use of documentation, management information and qualitative interviews with a range of relevant stakeholders. Fieldwork in 2015 resulted in early benchmarking and review of processes, and the follow-up fieldwork in 2017 built on the early findings. The evaluation piloted the use of an occupant survey (in Bradford City Centre) to address displacement and considered cases where similar additional data collection could be applied in the next phase. Primary research was carried out in the first quarter of 2015 and second quarter of 2017, and each round involved 15-20 interviews. Lead contacts were invited to comment on the findings.

61. Common to all interventions is a focus on the creation of new or safeguarded direct and indirect jobs (in supply chains or due to multiplier effects). In several cases the interventions have only just completed drawdown of funds, and findings are still relying on early visible outputs. These cases will therefore need to be examined again in future years when there will be more evidence available from their own evaluation exercises. Where completion reports and other monitoring resources were available these were incorporated into case study findings.

62. The report indicates the method used to analyse additional jobs. This early analysis was possible because, by the time of the analysis there had been about one year of data for employment after the opening of most of the Place-Based Programmes (Figure A2).

Figure A2: Timing of RGF Funding for Place-Based Interventions



63. Some summary statistics about the areas where the Place-Based Programmes were located are also tabulated.

Table A6: Socio-economic Indicators of RGF Supported and Unsupported Areas

	All Areas (Supported and Unsupported within 10 km)	Supported Areas	Unsupported Areas within 5km	Unsupported Areas within 2km	Unsupported Areas within 1km
Number of LSOAs	6199	34	2372	493	113
As a % of working population:					
Economically active	60.44	55.11	59.47	56.87	55.98
Self-employed	9.09	6.63	8.25	7.76	7.73
Full time Students	3.65	5.32	3.69	4.67	5.24
Young unemployed aged 16-24	1.41	1.61	1.48	1.56	1.53
Long-term Unemployed	2.08	2.40	2.13	2.25	2.30
Higher managerial	10.46	7.03	9.40	8.16	8.35
Lower managerial	20.39	15.95	18.89	17.23	16.95
Intermediate occupations	11.90	10.84	11.82	10.78	10.36
Small employers and own account workers	8.18	7.05	7.80	7.66	7.66
Lower supervisory occupations	6.49	7.44	6.89	6.87	6.66
Semi-routine occupations	13.52	14.65	14.50	14.76	14.34
Routine occupations	11.37	13.37	12.62	13.38	13.19
Area of Land					
Acreage	248.98	431.45	164.28	111.116	129.63
As a % of total population:					
White British	69.30	80.52	78.66	76.45	75.02
Mixed	3.17	0.95	1.32	1.23	1.18
Asian/ Asian British	10.85	2.04	2.85	2.62	2.68
Black/ Black British	6.23	12.33	11.51	15.06	16.28
Other Ethnic Group	1.94	2.73	5.18	4.10	3.95

Table A8: Summary Statistics for RGF Regional Projects Scheme 1: Supported in 2011/2, 2012/3 and 2013/4

	Successful (N=188)			Total (N=587,637)		
Statistic	Mean	Median	Std. dev	Mean	Median	Std. dev
Employment	1194.5	172.6	2884.5	44.7	9.0	793.5
Geo mean	174.4	172.5	8.8	11.5	9.0	2.8
Local unit employment	584.2	160.0	1124.0	44.0	9.0	774.7
Geo mean	134.2	149.6	7.0	11.5	9.0	2.8
Turnover (£'000)	436172	23477	1167238	7224	604	276896
Geo mean	27033	23023	15	669	587	4.30
No. of Non-RGF interventions	1.03	1.00	0.93	0.08	0.00	0.32
Value of Non-RGF interv'tions	539174	0.00	2008591	4639	0.00	200216
No. of local units	7.93	1.40	29.29	1.28	0.60	21.10
Age (years)	25.05	26.00	12.28	15.80	13.00	11.39
High Tech (%)	53	-	48	10	-	29
Low Pay (%)	2	-	13	37	-	48
Manufacturing (%)	69	-	44	10	-	29
Public sector employment (%)	21	-	3	19	-	3
Population density	1002	477	1241	1481	622	1735
Herfindahl Index	0.18	0.16	0.18	0.09	0.04	0.15

Note: The table presents the descriptive statistics for the sample of successful project beneficiaries. Mean and median values correspond to the cross-sectional values of individual businesses time-series averages. Average for employment and turnover are presented giving the corresponding geometric mean alongside the arithmetic mean for each.

Tables A9.1-5: Summary Statistics for RGF Schemes 3 and 4 (National and Regional Programmes)

Table A9.1: Summary Statistics for RGF Schemes 3 and 4 (2012)

	Scheme 3 Successful (N = 914)			Scheme 4 Successful (N = 276)			Unsuccessful (N = 1849)		
Treated 2012	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**
Employees	30.35	14.00	100.53	243.14	14.00	2013.43	72.69	6.00	918.98
Real Turnover	3180.17	1306.71	8130.67	189577.00	1158.58	2479168.00	8041.82	451.33	69614.27
Number of non-RGF interventions	0.50	0.00	0.80	0.77	0.50	0.99	0.51	0.00	0.80
Real Value of Non-RGF interv'tions	304.11	0.00	1491.83	647.57	0.00	5785.82	184.83	0.00	1211.12
No. Local Units	1.21	1.00	10.72	1.30	1.00	1.79	1.06	0.00	6.24
Age (years)	16.34	14.00	11.93	15.40	12.00	12.59	12.03	8.00	11.39
High Tech	0.21	0.00	0.41	0.29	0.00	0.45	0.23	0.00	0.42
Low Pay	0.14	0.00	0.35	0.16	0.00	0.37	0.19	0.00	0.39
Manufacturing	0.44	0.00	0.50	0.38	0.00	0.49	0.22	0.00	0.41
Public Sector Employment (%)	20.34	20.50	2.96	21.14	21.10	2.26	21.02	20.80	2.60
Herfindahl Index	0.17	0.07	0.34	0.17	0.07	0.25	0.18	0.08	0.33
	Non-applicant S3 (N = 214684)			**Non-applicant S4 (N = 214786)**					
Untreated	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**			
Employees	5.80	1.00	233.58	5.78	1.00	233.36			
Real Turnover	1196.95	111.57	147135.50	1186.98	111.53	146290.60			
Number of non-RGF interventions	0.02	0.00	0.16	105.28	87.30	36.62			
Real Value of Non-RGF interv'tions	8.40	0.00	535.21	100.22	100.60	1.91			
No. Local Units	0.81	1.00	0.44	0.00	0.00	0.00			
Age (years)	11.39	8.00	10.38	0.02	0.00	0.16			
High Tech	0.13	0.00	0.33	18.99	18.90	2.70			
Low Pay	0.29	0.00	0.46	100.20	99.40	3.70			
Manufacturing	0.05	0.00	0.23	1556.79	476.49	1972.61			
Public Sector Employment (%)	18.99	18.90	2.70	1196.12	111.58	147091.50			
Herfindahl Index	0.13	0.06	0.27	11.39	8.00	10.38			

The summary statistics are pre-treatment characteristics.

Unsuccessful applicants could have applied to either Scheme 3 or 4.

Table A9.2: Summary Statistics for RGF Schemes 3 and 4 (2013)

Treated 2013	Scheme 3 Successful (N = 666)			Scheme 4 Successful (N = 1114)			Unsuccessful (N = 2053)		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Employees	65.66	6.00	779.26	65.66	6.00	779.26	5.86	1.00	232.21
Real Turnover	7670.36	428.10	68488.15	7670.36	428.10	68488.15	1078.72	107.70	120784.80
Number of non-RGF interventions	0.49	0.00	0.78	0.49	0.00	0.78	0.02	0.00	0.16
Real Value of Non-RGF interv'tions	165.06	0.00	1113.31	165.06	0.00	1113.31	8.21	0.00	551.21
No. Local Units	1.01	0.00	6.20	1.01	0.00	6.20	0.82	1.00	0.43
Age (years)	11.94	8.00	11.44	11.94	8.00	11.44	11.49	8.00	10.64
High Tech	0.24	0.00	0.42	0.24	0.00	0.42	0.13	0.00	0.33
Low Pay	0.20	0.00	0.40	0.20	0.00	0.40	0.30	0.00	0.46
Manufacturing	0.21	0.00	0.41	0.21	0.00	0.41	0.05	0.00	0.23
Public Sector Employment (%)	21.01	20.80	2.60	21.01	20.80	2.60	18.98	18.90	2.70
Herfindahl Index	11.94	8.00	11.44	11.94	8.00	11.44	0.14	0.07	0.27
Untreated	**Nonapplicant S3 (N = 216264)**			**Nonapplicant S4 (N = 216391)**					
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**			
Employees	5.86	1.00	232.21	5.84	1.00	232.04			
Real Turnover	1078.72	107.70	120784.80	1069.49	107.70	120097.40			
Number of non-RGF interventions	0.02	0.00	0.16	0.02	0.00	0.16			
Real Value of Non-RGF interv'tions	8.21	0.00	551.21	8.15	0.00	549.34			
No. Local Units	0.31	0.00	5.85	0.31	0.00	5.84			
Age (years)	11.49	8.00	10.64	11.49	8.00	10.64			
High Tech	0.13	0.00	0.33	0.13	0.00	0.33			
Low Pay	0.30	0.00	0.46	0.30	0.00	0.46			
Manufacturing	0.05	0.00	0.23	0.05	0.00	0.23			
Public Sector Employment (%)	18.98	18.90	2.70	18.97	18.90	2.70			
Herfindahl Index	0.14	0.07	0.27	0.14	0.07	0.27			

The summary statistics are pre-treatment characteristics.

Unsuccessful applicants could have applied to either Scheme 3 or 4.

Table A9.3: Summary Statistics for RGF Schemes 3 and 4 (2014)

Treated 2014	Scheme 3 Successful (N = 762)			Scheme 4 Successful (N = 1263)			Unsuccessful (N = 2309)		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Employees	22.56	10.00	64.13	61.10	15.00	439.04	60.47	6.00	732.08
Real Turnover	2500.73	746.36	10386.01	20085.20	1284.03	374957.50	7615.31	372.34	70028.59
Number of non-RGF interventions	0.48	0.00	0.81	0.62	0.00	0.88	0.46	0.00	0.76
Real Value of Non-RGF interv'tions	118.78	0.00	632.43	209.52	0.00	1357.88	0.46	0.00	0.76
No. Local Units	0.65	0.00	1.48	1.87	1.00	28.10	147.87	0.00	1030.75
Age (years)	13.99	10.00	11.97	15.55	12.00	12.49	11.67	7.00	11.41
High Tech	0.22	0.00	0.41	0.29	0.00	0.45	0.24	0.00	0.43
Low Pay	0.16	0.00	0.37	0.13	0.00	0.33	0.20	0.00	0.40
Manufacturing	0.37	0.00	0.48	0.38	0.00	0.49	0.20	0.00	0.40
Public Sector Employment (%)	20.40	20.50	2.94	21.91	21.70	2.56	20.97	20.80	2.61
Herfindahl Index	0.17	0.06	0.35	0.18	0.09	0.31	0.18	0.09	0.31
Untreated	**Nonapplicant S3 (N = 222351)**			**Nonapplicant S4 (N = 222565)**					
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**			
Employees	5.83	1.00	226.24	5.81	1.00	226.06			
Real Turnover	1120.40	108.41	114865.50	1111.43	108.41	114219.90			
Number of non-RGF interventions	0.02	0.00	0.16	0.02	0.00	0.16			
Real Value of Non-RGF interv'tions	7.73	0.00	545.95	7.67	0.00	544.24			
No. Local Units	0.30	0.00	5.66	0.30	0.00	5.65			
Age (years)	11.26	7.00	10.82	11.26	7.00	10.82			
High Tech	0.13	0.00	0.34	0.13	0.00	0.34			
Low Pay	0.29	0.00	0.45	0.29	0.00	0.45			
Manufacturing	0.05	0.00	0.22	0.05	0.00	0.22			
Public Sector Employment (%)	18.97	18.40	2.70	18.97	18.40	2.70			
Herfindahl Index	0.14	0.07	0.27	0.14	0.07	0.27			

The summary statistics are pre-treatment characteristics.

Unsuccessful applicants could have applied to either Scheme 3 or 4.

Table A9.4: Summary Statistics for RGF Schemes 3 and 4 (2015)

Treated 2015	Scheme 3 Successful (N = 703)			Scheme 4 Successful (N = 508)			Unsuccessful (N = 2475)		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Employees	13.88	5.00	35.88	76.93	14.00	908.78	60.25	6.00	738.54
Real Turnover	790.70	254.89	1532.89	9364.85	1134.53	96532.08	7508.02	371.03	70719.32
Number of non-RGF interventions	0.42	0.00	0.74	0.62	0.00	0.91	0.42	0.00	0.74
Real Value of Non-RGF interv'tions	136.35	0.00	987.02	286.96	0.00	1094.89	136.35	0.00	987.02
No. Local Units	0.94	0.00	6.13	0.85	1.00	2.20	0.94	0.00	6.13
Age (years)	11.89	7.00	11.42	15.93	12.00	13.05	11.89	7.00	11.42
High Tech	0.24	0.00	0.43	0.32	0.00	0.47	0.24	0.00	0.43
Low Pay	0.20	0.00	0.40	0.15	0.00	0.35	0.20	0.00	0.40
Manufacturing	0.20	0.00	0.40	0.38	0.00	0.49	0.20	0.00	0.40
Public Sector Employment (%)	20.97	20.80	2.65	21.37	20.80	2.70	20.97	20.80	2.65
Herfindahl Index	0.17	0.08	0.30	0.18	0.09	0.30	0.17	0.08	0.30
Untreated	**Nonapplicant S3 (N = 227961)**			**Nonapplicant S4 (N = 228332)**					
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**			
Employees	5.84	1.00	218.17	5.82	1.00	218.00			
Real Turnover	1088.75	111.24	111186.90	1079.60	111.23	110565.70			
Number of non-RGF interventions	0.02	0.00	0.16	0.02	0.00	0.16			
Real Value of Non-RGF interv'tions	7.01	0.00	531.49	6.96	0.00	529.71			
No. Local Units	0.29	0.00	5.81	0.29	0.00	5.77			
Age (years)	11.13	7.00	10.96	11.13	7.00	10.96			
High Tech	0.13	0.00	0.34	0.13	0.00	0.34			
Low Pay	0.28	0.00	0.45	0.28	0.00	0.45			
Manufacturing	0.05	0.00	0.22	0.05	0.00	0.22			
Public Sector Employment (%)	18.97	18.40	2.70	18.96	18.40	2.70			
Herfindahl Index	0.13	0.07	0.27	0.13	0.07	0.27			

The summary statistics are pre-treatment characteristics.

Unsuccessful applicants could have applied to either Scheme 3 or 4.

Table A9.5: Summary Statistics for RGF Schemes 3 and 4 (2016)

Treated 2016	Scheme 3 Successful (N = 817)			Scheme 4 Successful (N = 278)			Unsuccessful (N = 2520)		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Employees	59.87	3.00	1179.33	1.10	1.00	0.32	61.99	6.00	790.95
Real Turnover	4828.67	180.00	94061.17	0.95	1.00	3.24	7791.79	392.02	73224.72
Number of non-RGF interventions	0.24	0.00	0.58	0.64	0.00	0.92	0.41	0.00	0.73
Real Value of Non-RGF interv'tions	71.76	0.00	732.12	193.24	0.00	784.34	131.23	0.00	976.03
No. Local Units	1.37	0.00	24.92	0.95	1.00	3.24	0.98	0.00	6.63
Age (years)	10.48	6.00	10.84	17.94	14.00	12.74	12.58	8.00	11.49
High Tech	0.23	0.00	0.42	0.28	0.00	0.45	0.25	0.00	0.43
Low Pay	0.19	0.00	0.40	0.14	0.00	0.35	0.20	0.00	0.40
Manufacturing	0.11	0.00	0.31	0.47	0.00	0.50	0.20	0.00	0.40
Public Sector Employment (%)	19.51	20.00	1.86	21.90	22.20	2.48	20.94	20.80	2.64
Herfindahl Index	0.17	0.07	0.31	0.17	0.08	0.28	0.17	0.08	0.30
Untreated	**Nonapplicant S3 (N = 233727)**			**Nonapplicant S4 (N = 234406)**					
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**			
Employees	5.72	1.00	212.81	5.70	1.00	212.56			
Real Turnover	1071.81	111.03	109580.50	1064.74	111.03	109254.80			
Number of non-RGF interventions	0.02	0.00	0.15	0.02	0.00	0.15			
Real Value of Non-RGF interv'tions	6.32	0.00	541.13	6.27	0.00	539.28			
No. Local Units	0.28	0.00	5.42	0.28	0.00	5.38			
Age (years)	11.03	7.00	11.09	11.03	7.00	11.09			
High Tech	0.14	0.00	0.34	0.14	0.00	0.34			
Low Pay	0.28	0.00	0.45	0.28	0.00	0.45			
Manufacturing	0.05	0.00	0.22	0.05	0.00	0.22			
Public Sector Employment (%)	18.95	18.40	2.70	18.95	18.40	2.70			
Herfindahl Index	0.13	0.07	0.27	0.13	0.07	0.27			

The summary statistics are pre-treatment characteristics.

Unsuccessful applicants could have applied to either Scheme 3 or 4..

Table A10.1: Impact on Employment Growth for National Programmes

Model	Match pool	Growth rate	Growth difference
Treated 2012 (N =828)			
Treated		36.12%	
Alternative Models	OLS after preferred model	-	21.4% (6.21)
	Unsuccessful Matched	16.80%	19.3% (5.46)
Preferred Model	BSD Matched	7.09%	29.0% (8.44)
	Unsuccessful Matched	24.13%	12.0% (5.89)
Treated 2013 (N =584)			
Treated		27.77%	-
Alternative Models	OLS after preferred model	-	15.3% (3.76)
	Unsuccessful Matched	11.79%	16.0% (3.8)
Preferred Model	BSD Matched	8.24%	19.5% (4.73)
	Unsuccessful Matched	19.81%	8.0% (3.45)
Treated 2014 (N =640)			
Across models	Treated	13.42%	-
Alternative Models	OLS after preferred model	-	3.9% (0.89)
	Unsuccessful Matched	11.80%	1.6% (0.62)
Preferred Model	BSD Matched	6.68%	6.7% (1.5)
	Unsuccessful Matched	11.80%	1.6% (1.1)
Treated 2015 (N =567)			
Treated		9.91%	-
Alternative Models	OLS after preferred model	-	8.1% (2.47)
	Unsuccessful Matched	0.51%	9.4% (2.86)
Preferred Model	BSD Matched	3.63%	6.3% (1.91)
	Unsuccessful Matched	2.25%	7.7% (2.32)
Treated 2016 (N =680)			
Treated		13.19%	-
Alternative Models	OLS after preferred model	-	8.7% (2.69)
	Unsuccessful Matched	3.11%	10.1% (3.16)
Preferred Model	BSD Matched	2.38%	10.8% (3.4)
	Unsuccessful Matched	4.66%	8.5% (2.66)

Note: The table reports the propensity score matching estimates of the average treatment effect of RGF treatment on the two groups of RGF programme beneficiary cohorts. The average treatment effect on employment (ATT) is estimated as the difference in the mean change in employment between the treated and control groups (DID). T-statistic for the weighted two-sample mean comparison is reported. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels.

Table A10.2: Impact on Employment Growth for Regional Programmes

Model	Match pool	Growth rate	Growth difference
Treated 2012 (N =252)			
Treated		31.56%	
Alternative Models	OLS after preferred model		19.6% (2.64)
	Unsuccessful Matched	21.71%	9.8% (1.41)
Preferred Model	BSD Matched	14.77%	16.8% (2.23)
	Unsuccessful Matched	24.13%	7.4% (2.32)
Treated 2013 (N =986)			
Treated		28.42%	
Alternative Models	OLS after preferred model		15.2% (4.72)
	Unsuccessful Matched	16.93%	11.5% (3.58)
Preferred Model	BSD Matched	3.45%	25.0% (7.77)
	Unsuccessful Matched	19.81%	8.6% (4.24)
Treated 2014 (N =1117)			
Across models	Treated	27.52%	-
Alternative Models	OLS after preferred model		19.4% (6.31)
	Unsuccessful Matched	8.27%	19.2% (6.19)
Preferred Model	BSD Matched	5.27%	22.3% (7.22)
	Unsuccessful Matched	11.80%	15.7% (6.13)
Treated 2015 (N =465)			
Treated		19.31%	-
Alternative Models	OLS after preferred model		18.7% (5.36)
	Unsuccessful Matched	0.61%	18.7% (5.31)
Preferred Model	BSD Matched	11.04%	8.3% (2.28)
	Unsuccessful Matched	1.31%	18.0% (5.19)
Treated 2016 (N =264)			
Treated		16.33%	-
Alternative Models	OLS after preferred model		11.8% (3.06)
	Unsuccessful Matched	2.82%	13.5% (3.8)
Preferred Model	BSD Matched	5.26%	11.1% (1.91)
	Unsuccessful Matched	3.94%	12.4% (3.2)

Note: The table reports the propensity score matching estimates of the average treatment effect of RGF treatment on the two groups of RGF programme beneficiary cohorts. The average treatment effect on employment (ATT) is estimated as the difference in the mean change in employment between the treated and control groups (DID). T-statistic for the weighted two-sample mean comparison is reported. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels.

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