|  |
| --- |
| ***Specification Reference*** |
| FS301068 |
| ***Specification Title*** |
| Valuing FSA R&D  |
| **Contract Duration** |
| July 2018 – July 2019 |

This specification, which forms part of the Invitation to Tender (ITT), comprises of three individual sections: -

1. **SPECIFICATION:** An outline of the requirement
2. **PROCUREMENT TIMETABLE:** An estimated timetable for the procurement of the proposed requirement
3. **TENDER REQUIREMENTS AND EVALUATION CRITERIA:** Provides guidance to applicants on the information that should be included within tenders and on the evaluation criteria and weightings used by appraisers when assessing and scoring tenders

Tenders for FSA funded projects must be submitted through the FSA E-sourcing and contract management system, ECMS, using the following link: <https://food.bravosolution.co.uk/web/login.html>. Failure to do so may result in the tender response not being processed by the system or the response being automatically disqualified during the evaluation stage of the tender process*.*

**THE SPECIFICATION, INCLUDING PROJECT TIMETABLE**

**AND EVALUATION OF TENDERS**

**GENERAL INTRODUCTION**

The Food Standards Agency is a non-ministerial government department governed by a Board appointed to act in the public interest, with the task of protecting consumers in relation to food. It is a UK-wide body with offices in London, Cardiff, Belfast and York.

The Agency is committed to openness, transparency and equality of treatment to all suppliers. As well as these principles, for science projects the final project report will be published on the Food Standards Agency website ([www.food.gov.uk](http://www.food.gov.uk) ). For science projects we will encourage contractors to publish their work in peer reviewed scientific publications wherever possible. Also, in line with the Government’s Transparency Agenda which aims to encourage more open access to data held by government, the Agency is developing a policy on the release of underpinning data from all of its science- and evidence-gathering projects. Underpinning data should also be published in an open, accessible, and re-usable format, such that the data can be made available to future researchers and the maximum benefit is derived from it. The Agency has established the key principles for release of underpinning data that will be applied to all new science- and evidence-gathering projects which we would expect contractors to comply with. These can be found at <http://www.food.gov.uk/about-us/data-and-policies/underpinning-data>

This work is cross-cutting and will support all of the FSA’s strategic outcomes by ensuring that appraisal, evaluation and assessment of food safety policy has the most robust and credible evidence underpinning decision making around those polices. This will help ensure the FSA’s strategic plan outcomes represent value for money and are economically efficient.

**A. THE SPECIFICATION**

**Background**

In recent years, government departments have aimed to better understand the range of impacts and economic benefits arising from public funding for Research and Development (R&D) activities.

The FSA funds R&D across a broad spectrum of areas including food eco-systems (consumer/business behaviour); food risks; targeted surveillance and regulation; and assessing the impact of innovative technologies on food systems. The rationale for this investment comes through improving public health, consumer confidence and developing more flexible approaches to regulation that deliver effective assurance.

The intended benefits from FSA funded research can be direct - such as investing in R&D to develop and validate innovative testing technologies that are more efficient and cost effective for industry; or indirect and much harder to measure and attribute, such as more viable new food safety standards which have positive social impacts such as lives saved, reduction in food risks, enhancement in the quality of life for vulnerable groups such as the elderly and children.

Many FSA R&D activities tend to fall within the latter - indirect benefits that are intangible and difficult to quantify. Attribution of benefits (and any value associated with them) or isolating the impact of a project or a programme of FSA research is very difficult, as the realisation of benefits may be reliant upon several other R&D outcomes and/or other sources of funding.

The FSA has conducted a literature review of existing research evaluation in the food, agriculture and medical spaces, as well as a review of a range of methodologies intended to value R&D investment. This literature review identified multiple possible established methodologies, but it was found that none were suitable to align with the FSA’s varied objectives. Specifically, as the FSA’s concerns include, but are not limited to: public health; business compliance; scientific advancement and trade facilitation. For that reason, this specification requires that a new tailored framework be developed.

There have been a number of previous attempts to identify returns internally, through the use of MCDA and more recently through the use of an adapted payback framework, a method that was identified in the literature as having been successfully applied to research evaluation. The initial exercise in scoring the benefits of REF 2014[[1]](#footnote-1) case studies gave some indication of the range of benefits that FSA R&D has, but there are significant limitations and caveats to the methodology. These included difficulties identifying the full range of impacts; the method of scoring not reflecting the varying degrees of impact for individual sub-categories and due to few of the identified case studies having been wholly funded by the FSA. Further details of the limitations of this work are available on request.

Strategic need

In order for the FSA to ensure it is investing public money in R&D to get the greatest return it needs a methodology to measure the impact of its research. This methodology should measure the varied outputs from the range of both internal and external research activities the FSA undertakes. The methodology should account for the notion that innovative research that may be risky in nature, the ultimate benefit of which may be unclear, is valued in addition to lower risk projects with more easily realised benefits. The primary outcome of this project is to be able to inform the prioritisation of future R&D investment through the analysis of the impact of previous FSA research spending. It is important that the methodology does not solely prioritise low risk/easy reward R&D projects, with the result of stifling more innovative projects that may be inherently riskier.

Without developing a way to measure impact of R&D the FSA will struggle to make a convincing, coherent value for money argument on its research spend. In addition, the FSA cannot ensure it is directing its spend towards the areas with the highest impact because it has no way to measure that impact. This research will also support the delivery of the Strategic Plan 2015-20[[2]](#footnote-2) and priorities in the Science and Evidence Strategy[[3]](#footnote-3).

Research aims

* To design and apply a methodology that allows for the comparison of the impact of FSA R&D projects in different areas.
* To design and apply a methodology to evaluate the impacts of FSA R&D, using a set of standardised criteria.
* To produce evidence the FSA can use to make strong value for money statements about its investment in R&D

**The Specification**

The FSA conducts research and development on a wide range of topics, both externally (through funding commissioned research projects) and internally (through research conducted in house by FSA employees). The project will look to develop and apply a new methodology which will estimate the impact of the full range of R&D activities undertaken by the FSA. These range from specific scientific research into foodborne disease and testing methods to broader research pieces, looking at the FSA strategic goals and socio-economic impact of policies.

We expect the research provider(s) to propose, develop and test a standardised methodology that is able to be applied to a representative sample of research projects across the spectrum of FSA activities in order to measure the impact of R&D. This will enable us to assess the full range of research with a common currency. We are explicit in our desire for a **new** methodology to be developed and not for an existing framework to be applied.

This project has therefore been designed as having two distinct work packages, with a break clause after the completion of work package 1, at which point the FSA will assess the value of moving to work package 2.

* Work package 1: The research provider will review the existing literature on research impact evaluation and conduct workshops with internal research project officers in order to design an innovative methodology that builds upon existing research. The research provider will then engage in an agile development and testing of this methodology (and possible others).
* Work package 2: The research provider will use the methodology established in work package 1 and apply it to a number of FSA research projects (provided by the FSA) in order to demonstrate that it can be used to evaluate relative impacts. These projects will form a representative sample so as to allow for the data to be applicable to the full range of FSA research.

The chosen methodology will need to allow the returns of FSA R&D investment in different areas to be compared, such that future R&D investment can be prioritised into areas where the returns to society are greatest. A full monetisation of R&D projects is not necessarily required, but a method of scoring the returns on investment is essential to establish the relative impacts.

**Methodology**

We expect the tenderer to suggest an approach they deem appropriate to answer the research questions and that appreciates the challenges of conducting this research. As the specification for work package 1 requires a methodology that has not previously been developed, it is not expected that a complete methodology be outlined in the tender application. Instead, the tenderer should include a roadmap of the concepts they expect to apply and research they intend to build upon to achieve the outcomes outlined in the specification. Where assumptions are made, these must be explicitly stated along with the rationale behind their application.

***Recommendations for approaches***

A full outline of the methodology is not expected in the tender application. Following the literature review a full outline of the chosen methodology will be required - along with a justification of how the approach/approaches satisfy FSA research aims and objectives. Whilst it is not necessary for the methodology to incorporate a case study approach, if such an approach is chosen, the FSA will provide details of past research projects with which to inform the methodology. The tenderer should make clear the assessment criteria used in coming to this decision and provide a full explanation of the methods that should be used to allow elicitation. This will include how the data is to be collected and what the rationale for use of various instruments is. The recommendation should also include an assessment of the validity and strengths of the proposed measure to be used in the specific context of food safety outcomes and how reliable and robust the evidence suggests these methods are. A draft set of research instruments should also be provided. It is likely that the Agency will wish to publish the literature review in advance of completion of the primary research for this project.

**Evidence Base**

Research providers should acquaint themselves with the existing literature in this and similar evaluation spaces.

The paper by Brookdale Consulting “Impact of the Institute of Food Research (IFR) (2013)[[4]](#footnote-4)” is a good starting point for the sort of outputs the FSA is looking for from this research. The IFR paper estimated annual benefits of £1m - £25m for research projects similar to some of those carried out by the FSA. The methodologies are unlikely to be able to be directly translated to all FSA R&D projects but the report should inform tenders. Furthermore, the arbitrary nature of many of the assumptions used to estimation of rates of return, benefits, implementation costs and the adoption rate by industry limits the quality of the work.

Research with respect to the medical sector offers some robust estimates of returns to research, where benefits are valued in a way which is appropriate to the FSA R&D which looks to improve public health. Not all FSA R&D will have benefits that can be translated directly to public health outcomes however. Existing medical sectors studies have looked at net health benefits (quantified through the use of QALYs or willingness to pay methodologies) and GDP gains (quantified as the increase resulting from medical research and further research building on the original project). Research into the evaluation of medical research impact has estimated internal rates of return between 9% and 30%[[5]](#footnote-5), with a DFID 2015 literature review concluding that a most reliable IRR for medical research was 9%-10%.

There have been studies estimating the impact of research in the agricultural sector, although the benefits of this research are further removed from the type of research undertaken by the FSA. A 2016 summary of the returns to food and agriculture R&D investments between 1958 and 2015 by Hurley et al[[6]](#footnote-6), found median IRRs by R&D focus of 41% for crops, 53% for livestock, 49% for developed countries excluding the US and 30% globally. Productivity gains are the most widely used measure of benefits in the literature and these are unlikely to be the most relevant to FSA research.

Haskel and Wallis[[7]](#footnote-7) [[8]](#footnote-8) found that R&D conducted by the UK public sector made through both government departments and higher education have insignificant effects on subsequent (one year lagged) private sector productivity growth, whereas research council R&D is significantly positively correlated. It is likely that returns to public sector R&D will not come through productivity growth and that returns will be lagged by more than one year.

It is important to note that the primary objective is to understand the differences in return between the FSA’s own research areas/project types, rather than establish a rate of return for FSA R&D spending overall.

**Deliverables**

The output of this research will be an applied methodology through which we can measure the impact of the FSA’s research output. We expect this to take the form of a report on the methodology, with the FSA providing literature and details of a small number of both previous and current research projects in order for the tenderer to show proof of concept.

In addition to monthly update meetings, the below outputs are expected. These are to be considered the minimum set of deliverables, and have been left deliberately open to allow them to be crafted depending on the nature of the chosen methodology.

**Work Package 1:**

**Output 1:** Literature review assessing the strengths/weaknesses of existing methodologies and a report detailing the new methodology to be used for this project – with clear justifications for the decisions made.

**Output 2:** A draft final report with key findings, including outputs from any workshops/interviews. FSA’s preferred reporting format is 1:3:25, where 1 refers to a one-page project summary, 3 refers to the executive summary and 25 refers to the full report (excluding annexes). Tenders are asked to comment on this format, in particular if the format is not suitable for the research being proposed. FSA expects all reports to include a project summary and executive summary. The report should contain an executive summary and be provided in electronic format (word).

**Output 3:** Agreed final report using the 1:3:25 format as stated above (excluding annexes). The report should contain a project summary, an executive summary, full report, and be provided in electronic format (word and PDF);

* The executive summary should refrain from simply bulleting the points in the main report, but should consider what the findings mean in a wider policy context;
* Proof of concept will be demonstrated by the tenderer through the application of the methodology of to a small sample of FSA projects provided by the FSA to the tenderer;
	+ There should be a summary of data regarding proof of concept of the methodology applied to the sample cases;
* The main body of the report should include detailed instructions outlining how to apply the methodology to the range of FSA R&D investment;
* PowerPoint presentation summarising the key research findings and recommendations; and
* Electronic files of the underpinning data, including the modelling tool.

**Contract break point:** Following the receipt of Output 3, the FSA will determine the value of applying the delivered methodology to a representative sample of past projects.

**Work Package 2:**

**Output 4:** A draft final report and/or data sheet with results from applying the methodology to the FSA case study projects. FSA’s preferred reporting format is 1:3:25.

**Output 5:** Agreed final report using the 1:3:25 format as stated above (excluding annexes). This report will be agreed following FSA feedback on the draft report.

Usually reports require two rounds of substantive comments by FSA officials (and any other parties involved in the project as appropriate) and a final round to finalise minor outstanding comments. Unless otherwise agreed, the project manager will co-ordinate comments and provide them to the contractor and all responses will be recorded. The final report will be subject to external peer review, following which further amendments may be required. Contractors should agree the timetable for reporting and publication with the project officer but should note that FSA normally expect two weeks to provide a co-ordinated response per round of substantive comments. Please confirm in your proposal how you will meet FSA’s requirements for reporting.

The Agency is committed to openness and transparency. As well as the final project report being published on the Food Standards Agency website (www.food.gov.uk), we encourage contractors to publish their work in peer reviewed scientific publications wherever possible. Also, in line with the Government’s Transparency Agenda which aims to encourage more open access to data held by government, the Agency is developing a policy on the release of underpinning data from all of its science- and evidence-gathering projects. Underpinning data should also be published in an open, accessible, and re-usable format, such that the data can be made available to future researchers and the maximum benefit is derived from it. The Agency has established the key principles for release of underpinning data that will be applied to all new science- and evidence-gathering projects which we would expect contractors to comply with. These can be found at <http://www.food.gov.uk/about-us/data-and-policies/underpinning-data>

*As required on a project by project base i.e. UKAS accreditation, ISO 9001 etc.*

*Quality management considerations should be given as to whether any particular standards need to be met.*

*Please list all specific requirements and insert any specific links*

*Examples of standards can be found at:*

[*http://www.iso.org/iso/home/standards.htm*](http://www.iso.org/iso/home/standards.htm)

*If the project includes any mathematical modelling, the quality assurance considerations need to include how the work will meet the standards in the Aqua Book:*

[*https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government*](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government)

*Will the ‘*[*Joint Code of Practice for Research’*](http://fsahome/how/science/Pages/JCoPR.aspx) *apply to your project?*

*https://www.gov.uk/government/publications/joint-code-of-practice-for-research-jcopr*

**Timings**

Suggested research components and reporting timescales are as follows:

|  |  |
| --- | --- |
| **TABLE 2. REPORTING TIMESCALE** |  |
| **Action** | **Timing** |
| Project Start | July 2018 |
| Output 1: Literature Review and proposed new methodology | September 2018 |
| Output 2: Draft final report | November 2018 |
| Output 3: Agreed final report | January 2019 |
| Contract break decision  | January 2019 |
| Output 4: Draft final report | May 2019 |
| Output 5: Agreed final report | July 2019 |

Tenderers must provide a proposed timetable including these dates, dates for outputs and other key dates as appropriate. Critical dates must be marked accordingly. The timetable must allow sufficient time for the Agency to comment on draft research materials including questionnaires, approach letters, etc. and sufficient time for reporting as detailed above. The timetable should also include indicative dates for a start-up meeting and any interim meetings where necessary.

**Personnel**

Details of all key personnel who will be working on this project must be given. Should any element of this project be subcontracted, this must also be stated in proposals with details of subcontracted companies, their key personnel and working arrangements with subcontractors. Tenderers should demonstrate previous experience of successful delivery of similar projects.

The tenderer will be required to appoint a Contract Manager (generally the named Principal Investigator) who will be fully accountable for the delivery of the project against the contract. They will be required to liaise closely with the Agency’s nominated project officer.

**Data issues**

Tenderers are asked to respond to each of these sections in relation to this project, this information is in addition to that submitted for the framework. In doing so FSA would like to draw particular attention to the Framework Standard Terms and Conditions on data security and the commissioning authority’s role as the ‘data controller’ and the contractor’s role as the ‘data processor’.

*Dataset for analysis*

The Agency requires a fully documented non-anonymised dataset which it can use for its own analysis and research purposes. We will also require sufficient documentation (including syntax of main and derived variables) to allow Agency analysts and external researchers to replicate analysis included in the outputs. The dataset will require encrypted identifiers for each record, with a separate file to link these to names and contact details – which would be held securely by the Agency. Tenderers must set out what documentation they would provide to accompany the dataset.

*Data security*

Please refer to the Framework Standard Terms and Conditions on data security and outline in your tender any specific issues related to this project. The successful tenderer will be asked to complete a Data Security Questionnaire which will be reviewed by the FSA data security team and will form part of the contract.

*Data permissions and referencing*

Contractors are responsible for ensuring that all necessary permissions are acquired for the use of data, visuals, or other materials throughout the life of the project that are subject to copyright law, and that the materials are used in accordance with the permissions that have been secured. Contractors are also responsible for ensuring suitable referencing of materials in all project outputs including project data.

**Ethics**

Tenderers are asked to identify the ethical concerns for this project and how these issues would be addressed.

**Cost**

The proposal must identify all anticipated costs of conducting the work, providing a cost breakdown of staff involvement and days dedicated to the project for each staff member, and all other associated overheads and expenses.

Examples of the costs which should be included in the cost breakdown, in addition to the main analysis, include:

* The charge for presentations and meetings
* Costs for delivering workshops
* A breakdown for any proposed sub-contractor involvement (if relevant)
* Any costs associated with making data available for further use (e.g. archiving)
* Access to other datasets, as necessary

Costs should be provided exclusive of VAT and should clearly state whether VAT will be charged.

Payments will be made against key milestones and a 20% retention will be held against delivery of the final report. A proposed payment schedule is required, please use the template provided.

1. **PROCUREMENT TIMETABLE**

Table 1 details an **estimated** project timetable for the project. Tenderers should however be aware that the Agency needs to acquire the evidence outlined in this ITT in a timely manner and you should justify your timings in your work plan.

|  |
| --- |
| **TABLE 1. ESTIMATED PROJECT TIMETABLE** |
| **EXPECTED DATE** | **INVITATION TO (ITT) TENDER**  |
| 9th May 2018 | Invitation to Tender (ITT) issued by the Agency  |
| 9th May 2018 | ITT Clarification period opens\* |
| 23rd May 2018 | ITT Clarification period closes\*\* |
| 12th June 2018 | Closing date for submission of ITT responses\*\*\* |
| 15th June 2018 | Evaluation of ITT responses  |
| 22nd June 2018 | Tenderers contacted with points raised by appraisers for clarification on their tender, with 2 weeks to respond |
| 6th July 2018 | Appraisal panel meeting held to consider clarified ITT responses |
| 13th July 2018  | Tenderers notified of outcome of appraisal and preferred Tenderer (or Tenderers) identified |
| 23rd July 2018 | Contract awarded and signed |
| 27th July 2018 | Project initiation meeting takes place and project commences  |
| 8th July 2019 | Latest date for submission of final report to FSA |

\* If a Tenderer wishes to raise any points of clarification over the procurement process, the actual project objectives or any other query these must be raised through the ECMS by the date specified.

\*\* Queries will not be answered after this date.

\*\*\* Submissions must be uploaded onto the ECMS before the closing date and time.

§ These stages are optional

**Further Information**

For any technical queries or issues regarding the use of ECMS please contact the eSourcing Helpdesk:

Phone: 0800 368 4850

Email: help@bravosolution.co.uk .

For any points of clarification regarding this specification or the FSA’s procurement procedures please submit through ECMS.

**Closing Date**

Tenders should be submitted on ECMS **by the date specified on ECMS.**

**Tenders received after this time will not be considered or evaluated.** **Please allow sufficient time to upload your tender and all supporting evidence before the closing date.**

**Notification of Submission of Tender**

On successfully submitting your tender you should see a popup box appear on the screen indicating that your tender has been successfully submitted. In addition you will receive an automatic email from ECMS with a reference code.

# EVALUATION OF TENDERS

# The Tenderers Application consists of the:

# Technical envelope (80% of overall value), in which applicants should detail the approach, the work plan and their ability to undertake the work, and

# Financial envelope (20% of overall value), in which applicants should outline all costs to conduct the proposed work, and

# Any other relevant supporting information

# Tenders will be evaluated by FSA internal appraisers and external experts using a numerical system. The table below shows the weightings that have been allocated to each section of the application form and these will be used by the appraisers:

|  |
| --- |
| **TABLE 2. EVALUATION CRITERIA FOR SELECTION OF SUCCESSFUL TENDERER** |
| **CRITERIA** | **PERCENTAGE WEIGHTINGS** |
| TECHNICAL CRITERIA – **80% overall Value** | Made up of |
| 1. Tender summary and objectives and the approach/scope of work, including innovation
 | 30% |
| 1. The plan and deliverables
 | 10% |
| 1. Organisational experience, expertise and staff effort
 | 15% |
| 1. Project management
 | 10% |
| 1. Risk management
 | 5% |
| 1. Quality management, ethics, data protection, dissemination and sustainability
 | 10% |
| FINANCIAL CRITERIA – **20% overall value** | 20% |

## The Technical Envelope

The Technical envelope is split in to 7 sections for evaluation. Guidance on how to complete each section is provided within the actual application form.

A numerical appraisal scoring system will be used to assess the information given in the Technical envelope of the tender. Appraisers will allocate a score of 0, 30, 60, 80 or 100 to each part of the Technical envelope, depending on the quality and relevance of evidence provided. The scores will then be subjected to the weightings given in Table 2.

All technical criteria will be evaluated as follows:

|  |  |
| --- | --- |
| SCORE | DESCRIPTION FOR SCORE OF EACH CRITERIA |
| 100 | Tender fully meets or exceeds the criteria set  |
| 80 | Tender would require minor modification but almost fully meets the criteria with only a few gaps in the evidence remaining  |
| 60 | Tender would require some modification but addresses most of the criteria, but may not be detailed enough and/or has several gaps remaining |
| 30 | Tender would require significant modification due to significant gaps  |
| 0 | Tender does not meet the specification or policy |

If the applicant does not reach a minimum score of 30 in the technical evaluation they will be automatically eliminated from the process.

## The Financial Envelope

The Financial envelope is split in to 5 sections. Guidance on how to complete each section is provided within the actual application form.

A numerical appraisal scoring system will be used to assess the information given in the financial envelope of the tender. Appraisers will allocate a score of 0, 30, 60, 80 or 100 to the financial envelope, depending on the quality and relevance of evidence provided. The scores will then be subjected to the weighting given in Table 2.

**Requirement for the financial envelope**

Please complete the Finance template provided. Costs should be quoted excluding VAT for the purpose of comparison of tenders. The Agency’s financial year runs from 1 April to 31 March. All costings should be recorded in line with this timescale.

**Evaluation of the financial envelope**

**Financial criteria will be evaluated as follows:**

|  |  |
| --- | --- |
| SCORE | DESCRIPTION FOR SCORE OF THE CRITERIA |
| 100 | There is full justification for the costs and the overall resources are appropriate. The tender is the best value for money for the work proposed to meet the specific evidence requirement advertised |
| 80 | There is some justification for the costs and the overall resources requested. The tender is reasonable value for money for the work proposed to meet the specific evidence requirement advertised. |
| 60 | Limited rational is given for the resources requested and/or the tender does not offer very good value for money, but is not poor value |
| 30 | The tender is relatively poor value for money with little/no justification for costs or resources requested. |
| 0 | The tender costs are not considered value for money and the applicant provided no rationale for costs or resources requested |

1. <http://impact.ref.ac.uk/CaseStudies/Results.aspx?val=FSA> [↑](#footnote-ref-1)
2. <https://www.food.gov.uk/sites/default/files/FSA%20strategy%20document%202015-2020_April%202015_interactive%20%282%29.pdf> [↑](#footnote-ref-2)
3. <http://www.food.gov.uk/science/sci-gov/scistrat> [↑](#footnote-ref-3)
4. <https://1stdirectory.co.uk/_assets/files_comp/03eaf039-e6c1-4040-8fca-7a340cfac261.pdf> [↑](#footnote-ref-4)
5. <https://www.mrc.ac.uk/publications/browse/medical-research-whats-it-worth/> [↑](#footnote-ref-5)
6. <http://www.instepp.umn.edu/sites/default/files/product/downloadable/Hurley%20et%20al%202016%20InSTePP%20--%20Returns%20to%20Food%20%26%20Agricultural%20R%26D%20Investments%20Woldwide%201958-2015.pdf> [↑](#footnote-ref-6)
7. <http://ftp.iza.org/dp4772.pdf> [↑](#footnote-ref-7)
8. <http://www.sciencedirect.com/science/article/pii/S0165176513000724> [↑](#footnote-ref-8)