





# Contents

Preface	3
Executive Summary	4
Introduction	7
Impact evaluation	9
Methodology	12
Definition	15
Findings	17
Summary of findings	25
References	26
Appendix A: Findings by outcome	27
Annendix B: Evidence Reviewed	28



# Preface

This report presents findings pertinent to EU Cohesion Policy, especially Structural Funds spending, arising from a systematic review of evaluations of economic area based initiatives (ABIs). The review covered evidence on programmes that aim to improve economic growth in a specific, well-defined, local area or set of areas.

This report is the tenth review produced by the <u>What Works Centre for Local Economic Growth</u>. The What Works Centre is a collaboration between the <u>London School of Economics and Political Science</u>, <u>Centre for Cities</u> and <u>Arup</u> and is funded by the <u>Economic & Social Research Council</u>, <u>The Department for Communities and Local Government</u> and <u>The Department for Business Innovation & Skills</u>.

These reviews consider a specific type of evidence – **impact evaluation** – that seeks to understand the causal effect of policy interventions and to establish their cost-effectiveness. To put it another way they ask 'did the policy work' and 'did it represent good value for money'? With this review we are particularly interested in demonstrating that the local economic impacts of area based initiatives can be rigorously evaluated and in drawing out the wider lessons for policy.

Evidence on impact and effectiveness is a crucial input to good policy making. Other ways of considering the impact of area based initiatives (e.g. case studies) provide a valuable complement to impact evaluation, but we do not focus on these in this report.

We see these impact-focused reviews as an essential part of more effective policy making. We often simply do not know the answers to many of the questions that might reasonably be asked when implementing a new policy – not least, does it work? Figuring out what we do know allows us to make better decisions and to start filling the gaps in our knowledge. This also helps us to have more informed discussions and to improve policy making.

These reviews therefore represent a first step in improving our understanding of what works for local economic growth. In the months ahead, we will be working with local decision makers and practitioners, using these findings to help them generate better policy.

Henry Overman;

Director, What Works Centre for Local Economic Growth



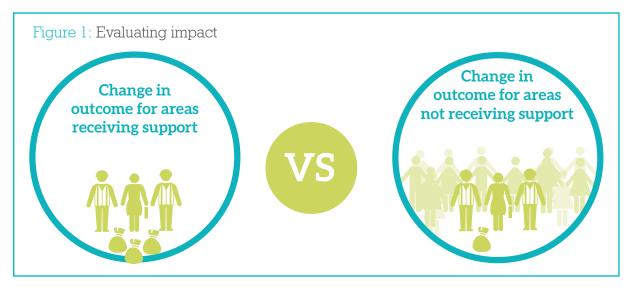
# **Executive Summary**

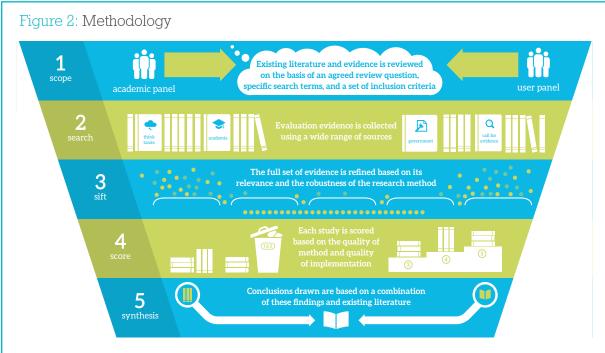
This report presents findings pertinent to EU Cohesion Policy, especially Structural Funds spending, arising from a systematic review of evaluations of economic area based initiatives (ABIs). ABIs are programmes that aim to improve economic growth in a specific, well-defined, local area or set of areas. This review is the tenth produced by the What Works Centre for Local Economic Growth. Enterprise Zones and other ABIs are covered in a companion report.

The review considered more than **2,100** policy evaluations and evidence reviews from the UK and other OECD countries. It found 58 impact evaluations that met the Centre's minimum standards. We divided these into three groups: evaluations of EU programmes (such as EU Structural Funds); Enterprise Zone evaluations; and a smaller set of evaluations covering other area based initiatives (such as Regional Selective Assistance).

# Approach

The Centre seeks to establish causal impact – an estimate of the difference that can be expected between the outcome for areas that benefit from support and the average outcome they would have experienced without support (see Figure 1). That is, shortlisted studies use evaluation methods that take deadweight into account and focus on additional impacts, if any. Our methodology for producing our reviews is outlined in Figure 2.





## Summary of findings: EU programmes

#### What the evidence shows

- EU support has a positive impact on regional GDP per capita in a little under half of the evaluations that consider GDP effects.
- Half of the studies which look at employment effects show a positive effect of EU support on employment.
- The evidence on a range of other outcomes is mixed (with only one study per outcome).
- Positive impact is bigger in relatively more developed regions.
- Consistent with this, two out of three studies that consider the 'dose' (e.g. expenditure per capita) suggest an optimum 'level' of treatment.

#### Where there is a lack of evidence

• We have no evidence on the extent to which the different components of spend change the effectiveness of support.

#### Lessons

- EU studies demonstrate the limits to evaluating multi-strand ABIs at a large regional scale.
- It is essentially impossible to say anything on the cost-effectiveness of different types of expenditure from overall evaluations. Policymakers would be better off designing specific evaluations of each strand of expenditure, rather than attempting only a single overarching evaluation.



# Introduction

Area based initiatives (ABIs) are policy initiatives aimed at tightly defined geographical areas, and provide a package of support aimed at improving economic, social or environmental outcomes within the zone. ABIs are very popular in many countries, as a tool for trying to tackle concentrated social or economic deprivation, especially in areas experiencing long term decline.

This review looks at the impact of EU Cohesion Policy, especially Structural Funds spending, which involves a broad range of interventions. In a companion review we consider the impact of Enterprise Zones and other economic area based initiatives.

EU Structural Funds are designed to improve economic outcomes in programme areas. These interventions may target firms, households or the physical environment of the area itself. Some policies tend to focus on only one of these dimensions, others may target multiple dimensions. The policy mix varies, but typically includes some or all of tax breaks, wage subsidies, reduced regulation or improved physical / transport / communications infrastructure. Many EU programmes operate at large scales, target whole regions, operate across multiple member states and offer a broader package of support, as we detail further below.

The evaluations we consider look at the overall effect of EU support on area outcomes. As will become clear from our discussion of the evidence, given the lack of any information on the breakdown of expenditure by type of spend (firm support, infrastructure, etc.) it is not possible to consider differences in effectiveness across spending types or to say much about how any positive effects come about. This has implications for the evaluation of current broad-based policy initiatives in England, such as Growth Deals and Devolution Deals (as we discuss further below).

In contrast to subsidies for firms, some ABIs target the characteristics and skills of households (e.g. to improve education or labour market participation). Generally speaking, we do not cover these kind of schemes in this review. That said, a number of the schemes we consider involve a component of support for households. As with many programmes, the boundary lines are sometimes fuzzy, but the focus in this report is on schemes that tend to support businesses either directly or indirectly. For similar reasons, we do not cover schemes that specifically target improvements to the built

environment. Although, again, some of the area based schemes we consider will involve an element of expenditure that does this.

A number of the EU schemes that we consider will involve a substantial component of infrastructure investment alongside economic incentives. Our previous reviews on broadband and transport investment discuss the likely effects of such investments.<sup>2</sup> We have included these 'broad' schemes here because they have a specific-area focus. Unfortunately, as we do not know the specific policy mix involved, it is hard to draw detailed conclusions on how we might improve policy effectiveness. Indeed, for these evaluations one of our key messages concerns the difficulties of evaluating overall effectiveness, and the need to develop specific item-by-item strategies to evaluate each component of the package appropriately. This will have implications for current discussions around the evaluation of City Deals and Devolution Deals. Again, we return to these issues below.



# Impact evaluation

Governments around the world increasingly have strong systems to monitor policy inputs (such as spending on a programme) and outputs (such as the number of new business in an Enterprise Zone). However, they are less good at identifying policy outcomes (such as the extent to which new firms in the zone increase overall area employment). In particular, many government-sponsored evaluations that look at outcomes do not use credible strategies to assess the causal impact of area based initiatives.

By causal impact, the evaluation literature means an estimate of the difference that can be expected between the outcome for areas receiving support and the average outcome they would have experienced without the support. Pinning down causality is a crucially important part of impact evaluation. Estimates of the benefits of a programme are of limited use to policymakers unless those benefits can be attributed, with a reasonable degree of certainty, to that programme.

The credibility with which evaluations establish causality is the criterion on which this review assesses the literature.

# **Using Counterfactuals**

**Establishing causality requires the construction of a valid counterfactual** – i.e. what would have happened to an area (or part of an area) if the programme hadn't happened. That outcome is fundamentally unobservable, so researchers spend a great deal of time trying to rebuild it. The way in which this counterfactual is (re)constructed is the key element of impact evaluation design.

A standard approach is to create a counterfactual group of similar places not undertaking the kind of project being evaluated. Changes in outcomes can then be compared between the 'treatment group' (locations supported by the policy) and the 'control group' (locations not supported by the policy). As we discuss below, in the case of area based interventions, such treatment and control groups are not always easy to identify.

A key issue in creating the counterfactual group is dealing with the 'selection into treatment' problem. Selection into treatment occurs when locations that receive support differ from those who do not do so.

For most area based initiatives, selection problems usually lead to downward bias. Areas targeted for support have weaker economies, so we may mistakenly attribute poor economic performance in the future to the programme rather than to underlying conditions in the area.

It is possible that an area based initiative might be targeted at relatively successful areas. If this happens, estimates of policy impact may be biased upwards because we incorrectly attribute better economic outcomes to the programme, rather than to the fact that the area is already performing better than average.

These factors are often unobservable to researchers. So the challenge for good programme evaluation is to deal with these issues, and to demonstrate that the control group is plausible. If the construction of plausible counterfactuals is central to good policy evaluation, then the crucial question becomes: how do we design counterfactuals? Box 1 provides some examples.

#### Box 1: Impact evaluation techniques

One way to identify causal impacts of a project is to randomly assign participants to treatment and control groups. For researchers, such **Randomised Control Trials** (RCTs) are often considered the 'gold standard' of evaluation. Properly implemented, randomisation ensures that treatment and control groups are comparable both in terms of observed and unobserved attributes, thus identifying the causal impact of the project. However, **implementation of these 'real world' experiments is challenging and can be problematic**, especially for economic ABIs, where policymakers may understandably be unwilling to randomise the location of projects.<sup>3</sup>

Where randomised control trials are not an option, 'quasi-experimental' approaches of randomisation can help. These strategies can deal with selection on unobservables, by (say) exploiting institutional rules and processes that result in some locations quasi-randomly becoming (say) EZs, or becoming EZs before other areas do.

Even using these strategies, though, the treatment and control groups may not be fully comparable in terms of observables. Statistical techniques such as **Ordinary Least Squares** (OLS) and matching can be used to address this problem.

Note that higher quality impact evaluation first uses identification strategies to construct a control group and deal with selection on unobservables. Then it tries to control for remaining differences in observable characteristics. It is the combination that is particularly powerful: OLS or matching alone raise concerns about the extent to which unobservable characteristics determine both treatment and outcomes and thus bias the evaluation.

### Evidence included in the review

We include any evaluation that compares outcomes for areas part of the programme (the treated group) after they receive support with outcomes in the treated group before they receive support; relative to a comparison group used to provide a counterfactual of what would have happened to these outcomes in the absence of the programme.

This means we look at evaluations that do a reasonable job of estimating the impact of the project using either randomised control trials, quasi-random variation or statistical techniques (such as OLS and matching) that help make treatment and control groups comparable. We view these evaluations as providing credible impact evaluation in the sense that they identify effects that can be attributed,

with a reasonable degree of certainty, to the project in question. A full list of shortlisted studies is given in Appendix B.

### Evidence excluded from the review

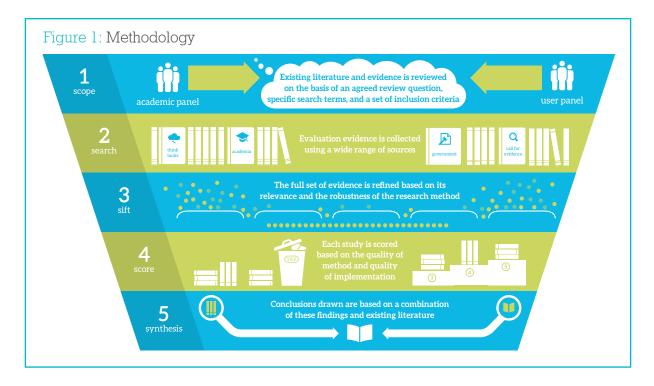
We exclude evaluations that provide a simple before and after comparison only for areas designated as (say) Enterprise Zones, because we cannot be reasonably sure that changes for the treated group can be attributed to the effect of the project.

We also exclude case studies or evaluations that focus on process (how the project is implemented) rather than impact (what was the effect of the project). Such studies have a role to play in helping formulate better policy but they are not the focus of our evidence reviews.



# Methodology

To identify robust evaluation evidence on the causal impact of area based initiatives we conducted a systematic review of the evidence from the UK and across the world. Our review followed a five-stage process: scope, search, sift, score and synthesise.



## Stage 1: Scope of Review

Working with our User Panel and a member of our Academic Panel, we agreed the review question, key terms and inclusion criteria. We also used existing literature reviews and meta-analyses to inform our thinking.

## Stage 2: Searching for Evaluations

We searched for evaluation evidence across a wide range of sources, from peer-reviewed academic research to government evaluations and think tank reports. Specifically, we looked at academic databases (such as EconLit, Web of Science and Google Scholar), specialist research institutes (such as CEPR and IZA), UK central and local government departments, and work done by think tanks (such as the OECD, ILO, ippr and Policy Exchange.) We also issued a call for evidence via our mailing list and social media. This search found just over 2,100 books, articles and reports.

## Stage 3: Sifting Evaluations

## Stage 4: Scoring Evaluations

We conducted a full appraisal of each evaluation on the shortlist, collecting key results and using the SMS to give a final score for evaluations that reflected both the quality of methods chosen and quality of implementation (which can be lower than claimed by some authors). Scoring and shortlisting decisions were cross-checked with the academic panel member and the core team at LSE. The final list of included studies and their reference numbers (used in the rest of this report) can be found in Appendix B.

# Stage 5: Synthesising Evaluations

We drew together our findings, combining material from our evaluations and the existing literature.

<sup>4</sup> Sherman, Gottfredson, MacKenzie, Eck, Reuter, and Bushway (1998).

<sup>5</sup> Sherman et al. (1998) also suggest that level 3 is the minimum level required for a reasonable accuracy of results.

Box 2: Our robustness scores (based on adjusted Maryland Scientific Methods Scale)

Level 1: Either (a) a cross-sectional comparison of treated groups with untreated groups, or (b) a before-and-after comparison of treated group, without an untreated comparison group. No use of control variables in statistical analysis to adjust for differences between treated and untreated groups or periods.

Level 2: Use of adequate control variables and either (a) a cross-sectional comparison of treated groups with untreated groups, or (b) a before-and-after comparison of treated group, without an untreated comparison group. In (a), control variables or matching techniques used to account for cross-sectional differences between treated and controls groups. In (b), control variables are used to account for before-and-after changes in macro level factors.

Level 3: Comparison of outcomes in treated group after an intervention, with outcomes in the treated group before the intervention, and a comparison group used to provide a counterfactual (e.g. difference in difference). Justification given to choice of comparator group that is argued to be similar to the treatment group. Evidence presented on comparability of treatment and control groups. Techniques such as regression and (propensity score) matching may be used to adjust for difference between treated and untreated groups, but there are likely to be important unobserved differences remaining.

Level 4: Quasi-randomness in treatment is exploited, so that it can be credibly held that treatment and control groups differ only in their exposure to the random allocation of treatment. This often entails the use of an instrument or discontinuity in treatment, the suitability of which should be adequately demonstrated and defended.

Level 5: Reserved for research designs that involve explicit randomisation into treatment and control groups, with Randomised Control Trials (RCTs) providing the definitive example. Extensive evidence provided on comparability of treatment and control groups, showing no significant differences in terms of levels or trends. Control variables may be used to adjust for treatment and control group differences, but this adjustment should not have a large impact on the main results. Attention paid to problems of selective attrition from randomly assigned groups, which is shown to be of negligible importance. There should be limited or, ideally, no occurrence of 'contamination' of the control group with the treatment.

Note: These levels are based on but not identical to the original Maryland SMS. The levels here are generally a little stricter than the original scale to help to clearly separate levels 3, 4 and 5 which form the basis for our evidence reviews.



# Definition of Area Based Initiatives

As discussed in the introduction, area based initiatives (ABIs) encompass a broad range of interventions at a variety of scales and of a variety of types. This evidence review focuses on three distinct types of support:

- EU Structural Funds (such as the European Social Fund and the European Regional Development Fund);
- Enterprise and Empowerment Zones;
- Other area based business support (such as Regional Selective Assistance).

This report focuses on EU Structural Funds. A companion report focuses on Enterprise and Empowerment Zones, plus other types of ABIs.

# Impact evaluation for area based initiatives

Evaluating the economic effects of area based initiatives is challenging: they potentially affect multiple economic outcomes in ways that are hard for researchers to disentangle.

There are also specific challenges in undertaking high quality impact evaluation. It is fairly easy to understand how we might construct control groups and undertake evaluation for policies targeted at individuals, households or firms. It is harder to think about how we might do this for policies that explicitly target specific areas. In addition to our substantive interest in the impacts of policy, one of our motivations in considering area based initiatives is to help convince decision makers that better evaluation is possible. This section provides a brief explanation of how the reports we considered have tried to do this. Further details on specific examples can be found in our scoring guide available from <a href="https://www.whatworksgrowth.org">www.whatworksgrowth.org</a>.

Evaluation of area based initiatives is particularly challenging. Often these locations will already be experiencing weaker economic growth, which is precisely why they have been targeted by the policy.

The effects of these underlying factors ('selection effects') must be accounted for if we want to understand the extent to which the area based initiative actually increases growth.

Selection is likely to be a bigger problem for the economic area based initiatives we consider in this report, than for some of our previous reviews that considered other area-level interventions. For example, when reviewing the effects of sports and cultural projects or estate renewal, policymakers will often see economic factors as one consideration among many when making decisions on projects. However, for the area based initiatives considered here, economic factors are likely to be a core consideration. For this reason, treated areas are almost always likely to be different to untreated areas, and some of these differences will be hard to observe in available data, making it very difficult to construct an appropriate control group. Furthermore, it is unlikely that these underlying differences will be constant over time.

In many circumstances evaluations could, in principle, use randomised control trials to address these concerns over selection. For area based interventions of the kind we consider here, it is hard to imagine situations in which true randomisation would be either feasible or desirable. This means that we need to rely on alternative evaluation approaches to try to address the problem of selection and thus identify the causal impact of the programme.

Many studies in this review attempt to address these 'selection problems' using variations on difference-in-difference or panel fixed effects methods. In these methods, the change in outcome in the 'treatment' areas (those that receive support) is compared with the change in outcome in a group of similar control areas (which do not).

In order to allow for these unobservable factors, and thus more reliably assess the impact of area based initiatives it is important to exploit some source of randomness in the way that the support is targeted.

For example, paper 1314 uses variation in area-specific eligibility criteria to examine the effect of Regional Selective Assistance on economic outcomes in the UK. Since the policy targets underperforming firms and regions, a simple comparison of outcomes between treated and control groups is likely to be biased by selection effects. This study, therefore, makes use of area-level changes in eligibility criteria that are not thought to be related to individual firm performance and are therefore a source of randomness in the policy at the firm level. The papers uses these changes in an instrumental variables approach to estimate the causal effect of the policy. A number of EU Structural Funds have similar differences in eligibility rules, which can be used to generate estimates of programme impact (as in studies 1186, 1187, 1188 and 1193).

If selection into area based programmes is based on unobservable as well as observable factors – as is likely – then these methods are potentially the only way to achieve reliable estimates of the impact on local economic growth outcomes. Future evaluations of area based programmes should pay close attention to techniques used in studies such as these, an issue to which we return below.



# Findings

This section sets out the review's findings. We begin with a discussion of the evidence base, and then explore the overall pattern of results. After this we consider specific outcomes in more detail.

The review initially considered 2,100 policy evaluations and evidence reviews from the UK and other OECD countries, identified during the initial keyword search. This is a significantly larger starting evidence base than most of our earlier reviews.

Following a further high level review, over 800 were sifted out as not relevant (e.g. because they were theoretical rather than data-based; reviewed non-OECD countries; or because of subject relevance). The remaining studies were grouped under the three sub-themes before undergoing a more detailed review. The findings pertinent to EU Cohesion Policy, especially Structural Funds spending, are outlined in the following sections. Enterprise Zones and other ABIs are covered in a companion report.

# EU policies

## Quantity and quality of the evidence base

Of the 1,300 studies considered in more detail, 190 covered EU policies. Of these, 172 were discounted on methodological grounds (i.e. scored 2 or below on the SMS scale). The remaining 18 studies have been included in this review.

This is a smaller evidence base than most of our reviews to date (on employment training, business advice, sports and culture projects, access to finance and estate renewal) but roughly on par with our review of broadband. As discussed above, this partly reflects the difficulties in evaluating area based initiatives but is also indicative of a failure to carefully evaluate existing policy interventions. Table 1 shows the distribution of the studies ranked by SMS score.

Table 1: Implementation Quality Scores			
SMS Score	Number of studies	Evaluation reference numbers	
4	4	1186, 1187, 1188, 1193	
3	14	1120, 1131, 1137, 1138, 1139, 1141, 1153, 1159, 1160, 1164, 1170, 1171, 1175, 1192	
Total	18		

We found no studies that used randomised control trials, but four that used credible quasi-random sources of variation. As discussed in the previous section, this is not surprising given the nature of the interventions. The remaining 14 studies used variations of difference-in-difference and panel methods (scoring 3 on the SMS). The techniques applied in these studies mean that we can be reasonably confident that they have done a good job of controlling for observable characteristics of areas, individual households and firms affected by EU support. However, it is likely that unobservable characteristics may still be affecting the results.

### Type and Focus of Support

In most of our previous evidence reviews we have focused on specific interventions aimed at delivering particular objectives (e.g. in our first review, the effect of government funded employment training on employment). In contrast, the EU policies that we consider here provide a range of different types of support all aimed at improving area outcomes.

Specifically, the EU support programmes examined in this report are instruments of EU Cohesion Policy.<sup>6</sup> As part of this policy, hundreds of thousands of projects all over Europe receive funding from the EU Structural Funds (comprising the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund and in addition, for the 2014-2020 budgetary period, the European Agricultural Fund for Rural Development (EAFRD), and the European Maritime and Fisheries Fund (EMFF)).

The overarching rationale of EU Cohesion Policy is outlined in the 1986 Single European Act as 'reducing disparities between the various regions and the backwardness of the least-favoured regions'. More specifically, in the most recent budgetary period, EU Structural Funds are allocated to achieve three objectives:

- Objective 1: to promote the development and structural adjustment of regions whose development is lagging behind;
- Objective 2: to support the economic and social conversion of areas experiencing structural difficulties;
- Objective 3: to support the adaptation and modernisation of education, training and employment policies and systems in regions not eligible under Objective 1.

Table 2 shows the breakdown of the focus of each article. Note that the categories are not mutually exclusive; some studies cover multiple policy strands.

	Table 2: Breakdown by focus of each article			
	Focus	Number of Studies	References	
	Structural Funds Overall	10	1120, 1131, 1139, 1159, 1160, 1164, 1171, 1186, 1192, 1193	
	Objective 1	6	1139, 1141, 1170, 1175, 1187, 1188	
	Objective 2	3	1137, 1153, 1170	
	Objective 3	1	1170	
FRDF		1	1138	

EU policies set the criteria for recipients of funding and allocate funds to eligible regions; however the decision on which projects these funds are spent are made at the national or subnational level. Detailed information on actual expenditure is very difficult to obtain. Only two studies (1138 and 1153) are able to consider differences by funding source (1138) and type (1153); two contrast impacts for different objectives (1139 and 1170) and one focuses on a specific type of support (1137).

We discuss these comparisons below, but in line with the available evidence, our main focus is on the overall impact of EU support for eligible areas.

Individual papers define 'support' in different ways. Four studies<sup>7</sup> look at per capita spend for regions receiving EU support. Study 1120 for example, looks at the impact of per capita spending on Italian regions receiving Structural Fund support. One study (1186) is the only evaluation to use an indicator of regional structural fund spending, divided by regional GDP to represent 'support.' A further four<sup>8</sup> papers also look at spend, but as a total for each region. Study 1159 for example, investigates the impact of total annual structural funding per region upon regional GDP per capita. A fifth study (1137) also looks at total regional spend, but for firms rather than regions.

The remaining three final papers<sup>9</sup> focus only on whether or not a region receives support, rather than the amount of support (using a binary indicator to identify regions receiving support).

Unfortunately, these variations in definition make it hard to compare findings across report. It also means that we have nothing to say on the relative cost-effectiveness of different types of projects or programmes supported by EU funds. That said, our other reviews have covered specific interventions some of which will have been funded by the EU (providing that evaluation of a suitable standard is available).

In terms of country coverage, the majority of studies looked at the impact of EU funding in regions across multiple countries within the EU. Only four studies confined their analysis to one country, with all of these looking at the effect of EU funds on Italian regions.

<sup>7 1120, 1131, 1141</sup> and 1175.

<sup>8 1159, 1139, 1170</sup> and 1188.

<sup>9 1138, 1187,</sup> and 1193.

## Findings by outcome

A breakdown of the studies by outcome and overall finding is provided in table A1 in the appendix.

#### GDP per capita

EU support has a positive impact on regional GDP per capita in a little under half the 11 evaluations that consider GDP effects

Table 3: Impact of EU support on GDP per capita		
Outcome	Number of studies	References
Positive	5	1120, 1131, 1175, 1187, 1193
Zero	2	1141, 1159
Mixed	4	1139, 1170, 1186, 1188

As discussed above, the majority of studies focus on assessing the impact of overall EU support on regional performance. For most studies this is primarily measured by the impact on GDP per capita. Eleven evaluations consider the impact of EU support on GDP per capita. Of these, five find positive impacts, two find no impact and four evaluations show mixed results (sometimes positive, sometimes zero or even negative).

Two of the five studies finding positive effects focus on the impact of Objective 1 status on GDP per capita. They report effects on GDP growth that vary from 0.6 percentage points per year (study 1193) to 1.6 percentage points per year (study 1187). The latter is a big effect and suggests unrealistically high returns on EU funds of more than one-for-one (specifically a 1.2 euro increase in GDP for every 1 euro of expenditure).

The remaining three studies finding positive effects focus on the impact of per-capita EU spending (rather than area objective one status). Unfortunately, these three studies report results in ways that are not directly comparable. Specifically, Study 1120 reports effects in terms of a 10% increase in percapita spending (which on average increases GDP per capita by 0.9%); Study 1131 reports effects in terms of the percentage of regional GDP; while study 1175 looks at the effect on convergence rates. These three studies also consider whether the effects of support vary over time and across regions. We discuss those results further below.

In contrast to these positive effects, studies 1141 and 1159 find zero effects of EU funds. Paper 1141 looks specifically at Objective 1 funding, and finds no effects, suggesting that funded and non-funded regions form separate "convergence clubs" (i.e. are moving towards different long run levels of GDP per-capita).

We have classified the findings of study 1186 as mixed, although for GDP per capita they only find positive effects in one of six different specifications reported. This is quite weak evidence of impact.<sup>11</sup> The other three studies reporting mixed results provide stronger evidence of impact.

<sup>10</sup> Study 1131 reports that objective 1 regions on average received EU transfers of 1.9% of GDP per annum. It estimates an average treatment effect for objective 1 status of a 1.5% increase in annual GDP per capita. Using these figures to approximate the effect of a 10% increase in per-capita spend suggest an increase of 0.86% (=1.1 x 1.5/19) very close to the 0.9% figure from Study 1120.

<sup>11</sup> Findings for innovation are also negative, as discussed further below.

Paper 1139 and 1170 both report mixed findings and are similar in that they find positive impacts of Objective 1 funds, but zero to negative effects of other types of EU Structural Funds. Paper 1139 finds that the cumulative impact of a 10% increase of Objective 1 funds generates an increase of between 0.7% and 3% of the GDP per-capita level of recipient regions (depending upon the statistical specification used). On the other hand, total Structural Funds do not show any significant impact. Paper 1170 finds that a 1% increase of Objective 1 payments leads to a small but positive impact on the regional GDP per capita by approximately 0.05%; however, the growth effects of the total amount of Objective 1, 2 and 3 payments are, in most specifications, not statistically significant, implying no effect or even negative effects of Objective 2 and 3 payments, respectively.

Finally, results for study 1188 are mixed: consistently positive for some types of regions but not others. Again, we discuss these results further below.

### Employment

Only four studies look at employment effects, with half of these showing a positive effect of EU support on employment

Table 4: Impact	of EU support	on employment
-----------------	---------------	---------------

Outcome	Number of studies	References
Positive	2	1137, 1138
Zero	1	1187
Mixed	1	1171

Four evaluations consider the impact of EU support on employment. Of these, two find positive impacts, one finds no impact and one shows mixed results (sometimes positive, sometimes zero or even negative).

Paper 1137 finds that for treated provinces (in Italy) every 1000 euros of Objective 2 EU incentives generates an additional 0.5 jobs. This study also considers variation across industry and type of region as discussed below.

Paper 1138 finds that the average employment impact of ERDF co-funded programs in Italy is to add 2.6 employees per firm. The paper suggests that the effects of capital grants and soft loan assistance alone are similar at around 2.5 additional employees per firm; while support that offers both capital grants and soft loan assistance increases employment by 3.7 employees per firm. It finds no differences between ERDF co-funded programmes and stand-alone national or regional programmes.

Paper 1187 finds no significant employment effects of Objective 1 funding to NUTS2 regions during the period in which transfers are allocated.<sup>12</sup>

Paper 1171 finds mixed results, consistently positive for some types of regions but not others. Again, we discuss these results further below.

<sup>12</sup> Study 1187 reports some sensitivity tests that result in positive estimates when allowing for spillover effects from other treated regions within a radius of 200km. Unfortunately, the specifications used are hard to interpret and so we ignore these positive findings when classifying the study.

#### Other outcomes

The evidence on a range of other outcomes is mixed (with only one study per outcome).

A number of studies consider other outcomes, although for these other outcomes we have at most one study considering effects which makes it hard to reach any general conclusions.

Study 1120 looks at the effect of EU support on labour productivity. In contrast to the positive effect on GDP per capita (discussed above) the study finds that regional EU support has no impact on labour productivity.

Study 1160 looks at the effect of EU Cohesion Policy payments<sup>13</sup> on National Public Spending. Results show that EU Cohesion Policy payments do not cause public investments to increase significantly, which points to a crowding out of national investment.

Paper 1164 looks at the impact of EU funding on Foreign Direct Investment. It finds mixed results, with the effect on FDI flows depending on level of institutional quality. In particular, for countries with high quality institutions, Structural Funds have a positive impact on FDI, whereas for countries with low quality institutions the impact can be negative. <sup>14</sup> The paper also investigates the impact of market size, growth, agglomeration, labour cost, and macro-economic stability upon FDI, but does not link this to EU funding.

Paper 1192 looks at the impact of European Structural Funds (the sum of regional, social and cohesion funds) on the location of industries (measured as the country share of the EU total in each industry). It finds that industrial activity has become more concentrated, and this concentration has occurred where regions already have a large industrial share. Alongside this, EU funds have the most success in attracting R&D intensive industries to areas receiving relatively high amounts of aid.

Study 1186 looks at the effect of EU funding by region upon innovation. The paper reports a significant, direct negative effect of EU funding on innovation outputs (measured using patent applications).

Study 1153 looks at the effect on firm level outcomes of two different types of intervention undertaken in Italy to incentivise economic development. Both are Objective 2 structural fund programmes. The paper compares the Public Concessional Loan for SMEs in industry and services, which is 50% grant and 50% loan, and the Free Grant for SMES in industry and services, which provide a grant for up to 50% of project costs. The evaluation shows little difference between the two schemes, which both have initial positive effects on some outcomes, which fade over time after completion.

## Heterogeneity by type of region

Four out of five studies that consider differences across regions suggest impact is bigger in relatively more developed regions.

Five studies assess whether the effect of EU support differs by type of region. Four out of these five suggest that the impact is bigger in relatively more developed regions.

<sup>13</sup> This includes the different Structural Funds, the Cohesion Fund and the Instrument for Structural Policies for Preaccession for the accession countries.

<sup>14</sup> Results by country: Percentage point change in the FDI/GDP ratio per 1 percentage point increase in the share of SF in GDP: Negative effects: Greece -0.221; Italy -0.127; Belgium -0.095; Portugal -0.078; France -0.054; Spain -0.016. Positive effects: Ireland 0.065; Austria 0.093; UK 0.263; Sweden 0.480; Finland 0.483; Denmark 0.485; Netherlands 0.488.

Study 1131 splits regions in to four groups according to their predicted per-capita GDP gap prior to the respective programming period. The paper reports that many of the poorest regions in the Union display a much weaker response to transfers than those that are closer to, but still below the EU's average per-capita income level.

Consistent with this, Study 1137 suggests that Objective 2 area incentives are most effective in areas that experienced the least negative pre-intervention employment changes (i.e. were doing relatively well before receiving support).

The differential effects across regions are even more marked in Study 1188 which suggests that only those regions with a sufficiently high endowment of human capital (about 47% of the regions examined within the study) and a high quality of government see faster growth from receiving Objective 1 funds. Those regions are the ones which are responsible for an overall positive average effect of the programme. In the remaining regions with a lower endowment of human capital, no effects are found.

Study 1171 finds a similar pattern, even suggesting that the impact of EU structural funds are negative in these areas with a low share of highly skilled workers and positive in those areas with a high share of high skilled workers (in fact, the magnitude of the effects are equal but opposite).

Only one study (1120), goes against these pattern of results, finding a stronger positive effect for the Mezzogiorno region than other richer regions in the Centre-North of Italy for GDP per capita (the differential impact for this region is about 0.06 percentage points, compared to an average effect of 0.91%).

### Timing of effects and changes in effectiveness over time

Paper 1175 finds diminishing effects over time. It finds that the effect of Objective 1 funding in EU15 regions is positive and significant with regards to regional GDP; however the growth and convergence rate of treated regions was much higher during the first programming period (1995-2000). For the second programming period (2000-2004), the effect of EU funds is diminished, such that "the evolution of these regions is worse in terms of convergence, even if the impact on growth of the SF still remains significant" (p 199).

Paper 1187 finds that on average, Objective 1 status raises real GDP per capita growth by roughly 1.6%. The paper finds that these positive effects are not felt immediately however, and that it takes approximately four years for the effects of the funds to be felt.

## Intensity of support ('dosage effects')

Consistent with the findings on differences across regions, two out of three studies that consider the intensity of support ('dose' effect) suggest an optimum 'level' of expenditure per capita.

Paper 1159 takes a "dose" approach, looking at the relationship between how much Structural Funds are received in target areas, and the level of their GDP growth. The paper finds that although a positive relationship exists up to a dose of approximately 2.1% of GDP, the relationship is not statistically significantly different from zero, implying that it does not matter which "dose" of Structural Funds payments a region receives. If the results were to be significant, it suggests that there may be some optimum level of treatment (in this case 2.1% of initial GDP).

In addition, paper 1131 also looks at dosage impacts upon regional GDP, by investigating the optimum and maximum desirable level of regional EU transfers as a proportion of target region GDP. Results point to an optimal transfer intensity of 0.4% of target region GDP, and a maximum desirable intensity of 1.3%.

Paper 1138 also presents a 'dose' type analysis by looking at the employment effects of ERDF cofunded programs in Italy at different levels of support. These results do not suggest that there is an optimum level of assistance in raw terms: rather, job creation rises as the magnitude of assistance rises. However, when the cost of the policy per employee is factored in, the cost of each additional job created also increases, such that the cost per employee is approximately fifteen times higher in the highest support bracket compared to the lowest. This would suggest that in cost terms at least, there is likely to be an optimum level of treatment.

<sup>15</sup> Specifically, the authors use the Gross Grant Equivalent (GGE) to compare impacts across firms: GGE is essentially a standardised measure of the magnitude of grant received by each assisted firm.

<sup>16</sup> The results show that the average employment impact of the programs is 1.87 additional jobs (when the standardised grant is less than €9.7k); 1.69 additional jobs (for grants between €9.7k and €25.7k); 3.2 additional jobs (€25.7-69.9k); and 6.86 additional jobs (above €69.9k).



# Summary of findings: EU programmes

#### What the evidence shows

- EU support has a positive impact on regional GDP per capita in a little under half the 11 evaluations that consider GDP effects.
- Only four studies look at employment effects, with half of these showing a positive effect of EU support on employment.
- The evidence on a range of other outcomes is mixed (with only one study per outcome).
- 4/5 studies that consider differences across regions suggest impact is bigger in relatively more developed regions.
- Consistent with this, 2/3 studies that consider 'dose' suggest an optimum 'level' of treatment (i.e. expenditure per capita).

#### Where there is a lack of evidence

We have no evidence on the extent to which the different components of spend change the
effectiveness of support.

#### Lessons

- EU studies demonstrate the limits to evaluating multi-strand ABIs at a large regional scale.
- It is essentially impossible to say anything on the cost-effectiveness of different types of expenditure from overall evaluations (especially given poor information on distribution of actual expenditures). Policymakers would be better off designing specific evaluations of each strand of expenditure, rather than attempting only a single overarching evaluation.



# References

Beekmans J, Ploegmakers H, Martens K, and van der Krabben E. (2015) Countering decline of industrial sites: Do local economic development policies target the neediest places? Urban Studies online first, doi:10.1177/004209801560328.

Busso M, Gregory J and Kline P. (2013) Assessing the Incidence and Efficiency of a Prominent Place Based Policy. American Economic Review 103: 897-947.

Cheshire P, Nathan M and Overman H. (2014) Urban Economics and Urban Policy, Cheltenham: Edward Elgar.

Gibbons S, Nathan M and Overman H. (2014) Evaluating spatial policies. SERC Policy Paper SERCPP12. London: LSE.

Glaeser E and Gottlieb JD. (2008) The Economics of Place-Making Policies. Brookings Papers on Economic Activity 2008: 155-239.

Kline P and Moretti E. (2013) Place Based Policies with Unemployment. The American Economic Review 103: 238-243.

Larkin K and Wilcox Z. (2011) What would Maggie do? London: Centre for Cities.

Lawless P, Overman HG and Tyler P. (2011) Strategies for Underperforming Places. Spatial Economics Research Centre Policy Paper SERCPP006. London: SERC.

Neumark D and Simpson H. (2014) Place-Based Policies. NBER Working Paper 20049. Cambridge, MA: NBER.

Sherman LW, Gottfredson DC, MacKenzie DL, et al. (1998) Preventing Crime: What Works, What Doesn't, What's Promising. National Institute of Justice Research Brief,. Washington DC: US Department of Justice.

# Appendix A

Table A1: Findings by outcome: EU

	Total				
Outcome	evaluated	Positive	Zero	Negative	Mixed
GDP Per Capita	11	1120, 1131, 1175, 1187, 1193	1141, 1159,		1139, 1170, 1186, 1188
Employment	4	1137, 1138 <sup>17</sup> ,	1187		1171
Labour Productivity	1		1120		
National Public Investment	1		1160		
Foreign Direct Investment	1				1164
Location of Industry	1	1192			
Innovation	1			1186	
Net Tangible/ Intangible Investment by Firms	1	1153			
Cash Flow	1		1153	1153	
Firm Size	<b>1</b> 18	1153			1153
Value Added per Employee	1		1153		
Profitability	1		1153		
Net Working Capital	1		1153		

<sup>17</sup> Whilst the overall effect of EU funds is positive on employment, the paper finds no significant difference between EU funded programmes and nationally/regionally funded programmes on employment.

<sup>18</sup> Paper 1153 reports on two types of intervention (A and B) using EU funding and finds positive results for measure A and mixed results for measure B. Thus it appears twice

# Appendix B: Evidence Reviewed

Ref	Reference
1120	Aiello, F and Pupo, V (2009). Structural Funds and Economic Divide in Italy. Journal of Policy Modeling. 34(3), 403-418.
1131	Becker, SO; Egger, PH and Von Ehrlich, M (2012). Too Much of a Good Thing? On the Growth Effects of the EU's Regional Policy. European Economic Review. 56(4), 648-668.
1137	Bondonio, D and Greenbaum, RT (2006). Do Business Investment Incentives Promote Employment in Declining Areas? Evidence from EU Objective-2 Regions. European Urban and Regional Studies. 13(3), 225-244.
1138	Bondonio, D and Greenbaum, RT (2014). Revitalizing Regional Economies through Enterprise Support: An Impact Evaluation of Multiple Instruments. European Urban and Regional Studies. 21(1), 79-103.
1139	Bouayad-Agha, S; Turpin, N and Vedrine, L (2013). Fostering the Development of European Regions: A Spatial Dynamic Panel Data Analysis of the Impact of Cohesion Policy. Regional Studies. 49(9), 1573-1593.
1141	Breidenbach, P; Mitze, T and Schmidt, CM (2011). Evaluating EU Regional policy: Many Empirical Specifications, One (Unpleasant) Result. Working Paper.
1153	Fantino, D and Cannone, G (2013). Evaluating the Efficacy of European Regional Funds for R&D. Banca D'Italia Eurosistema Working Paper 902.
1159	Hagen, T and Mohl, P (2008). Which is the Right Dose of EU Cohesion Policy for Economic Growth? ZEW - Centre for European Economic Research Discussion Paper 08-104.
1160	Hagen, T and Mohl, P (2009). How Does EU Cohesion Policy Work? Evaluating its Effects on Fiscal Outcome Variables. ZEW Discussion Paper 09-051.
1164	Katsaitis, O and Doulos, D (2009). The Impact of EU Structural Funds on FDI. Kyklos International Review for Social Sciences. 62(4), 563-578.
1170	Mohl, P and Hagen, T (2010). Do EU Structural Funds Promote Regional Growth? New Evidence from Various Panel Data Approaches. Regional Science and Urban Economics. 40(5), 353-365.
1171	Mohl, P and Hagen, T (2011). Do EU Structural Funds Promote Regional Employment? Evidence from Dynamic Panel Models. European Central Bank Working Paper 1403.
1175	Puigcerver-Penalver, MC (2007). The Impact of Structural Funds Policy on European Regions' growth. A Theoretical and Empirical Approach. The European Journal of Comparative Economics. 4(2), 179-208.
1186	Akcomak, IS and Ter Weel, B (2007). How do Social Capital and Government Support Affect Innovation and Growth? Evidence from the EU Regional Support Programmes. United Nations University Working Paper 2007-009.
1187	Becker, SO; Egger, PH and Von Ehrlich, M (2010). Going NUTS: The Effect of EU Structural Funds on Regional Performance. Journal of Public Economics. 94(9-10), 578-590.
1188	Becker, SO; Egger, PH and Von Ehrlich, M (2011). Absorptive Capacity and the Growth Effects of Regional transfers: A Regression Discontinuity Design with Heterogenous Treatment Effects. American Economic Journal: Economic Policy. 5(4), 29-77.
1192	Midelfart-Knarvik, KH and Overman, HG (2002). Delocation and European Integration: Is Structural Spending Justified? Economic Policy. 17(35), 321-359.
1193	Pellegrini, G; Terribile, F; Tarola, O; Muccigrosso, T and Busillo, F (2013). Measuring the Effects of European Policy on Economic Growth: A Regression Discontinuity Approach. Papers in Regional Science. 92(1), 217-233.

Find the full list of search terms we used to search for evaluations on our website here: <a href="https://www.whatworksgrowth.org/policies/area-based-initiatives/search-terms">www.whatworksgrowth.org/policies/area-based-initiatives/search-terms</a>.

The What Works Centre for Local Economic Growth is a collaboration between the London School of Economics and Political Science (LSE), Centre for Cities and Arup.

www.whatworksgrowth.org







This work is published by the What Works Centre for Local Economic Growth, which is funded by a grant from the Economic and Social Research Council, the Department for Business, Innovation and Skills and the Department of Communities and Local Government. The support of the Funders is acknowledged. The views expressed are those of the Centre and do not represent the views of the Funders.

Every effort has been made to ensure the accuracy of the report, but no legal responsibility is accepted for any errors omissions or misleading statements.

The report includes reference to research and publications of third parties; the what works centre is not responsible for, and cannot guarantee the accuracy of, those third party materials or any related material.

HM Government



January 2016
What Works Centre for Local
Economic Growth

info@whatworksgrowth.org @whatworksgrowth

www.whatworksgrowth.org

© What Works Centre for Local Economic Growth 2016