

A note on evaluation of the WCMA's Land Remediation Fund

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In evaluating the Fund, it is important to think about the range of different potential impacts and the spatial scales over which these impacts might operate. The *Regeneris* proposal has picked up on a lot of these potential impacts in its logic model. However, a potential area for improvement is in selecting appropriate methods for evaluating such impacts.

This note suggests that a full evaluation of the Fund should examine impacts across three separate spatial scales: site, proximity to site, and the local economy. For each scale, the note provides a motivation (akin to a logic chain) and suggestions regarding key outcomes, relevant methods, and interpretation.

1. Site

Motivation: it is clear that Fund investment should lead to an increase in developable land, and an increase in direct outputs such as houses and jobs. However, even in the absence of support, chosen sites might have (a) received some level of remediation (i.e. fully private remediation), or (b) received some development despite a lack of remediation.

Key outcomes: direct outputs listed in the invitation to tender (ITT) such as houses, commercial floorspace, jobs, and so on. Residential population is also important, potentially.

Method: diff-in-diff using unsuccessful applicants as a control group. One option would be to create a control group of unsuccessful applicant sites that are observably similar to supported sites using propensity score matching. Another option would be to make use of the fact that, according to the ITT, site applications will be assessed as 'strong', 'medium' or 'low' according to their fit with the Fund's key priorities. For example, if a necessary but not sufficient condition for receiving support is to score a 'strong', then the control group could be made up of unsuccessful applications that also scored a 'strong'. Matching and use of application scores may be combined.

Interpretation: Estimates give the net site-level effect on key outputs resulting from Fund investment. However, there is no guarantee that measured additional development, jobs, residents, etc., has not been displaced from further afar.

2. Proximity to site

Motivation 1: investment that successfully returns site land to residential or business use may have 'spillover' effects on nearby areas. Firstly, remediation and return to use may improve the 'amenity' value of commercial or residential properties that are nearby but not located on the site itself (for example, if visual attractiveness is improved). Secondly, there may be productive spillovers that improve economic outcomes for nearby firms.

Motivation 2: additional outputs on the site itself may come at the expense of outputs further afar. Houses or commercial space built on the remediated land may have been built in nearby areas instead. Jobs created on the remediated site might attract applicants who would have instead been employed in nearby areas.

Key outcomes: house prices and rents, commercial prices and rents, wages, business outcomes, direct outputs listed in ITT, population

Method: diff-in-diff using similar properties further away, or properties around unsuccessful applicant sites as a control group. The 'treatment' variable for this analysis would be a measure of

distance from the supported site. Potential options are: straight-line distance (e.g. linear or binomial), or a set of dummy variables capturing distance bands (e.g. <1km, 1km-2km, 2km-3km, etc.). For distance bands, it is common to experiment with different widths and maximum distances. (You might also want to have an 'inside' site dummy to test for effects on pre-existing on-site properties/businesses etc., if any). The control group would then be (a) matched similar properties outside of the expected range of impact for these spatial effects/displacement (e.g. >10km), or (b) properties at similar distances to unsuccessful applicant sites (see Analysis 1). These method suggestions for 'properties' could equally be used for firms or small areas, in order to examine direct outcomes, business outcomes or population outcomes.

Interpretation: estimates would provide a combination of spillover effects of Fund investment and any potential displacement, for observations at specific distances from treated sites. As such they might be either positive or negative. The extent to which the estimates reflect displacement or spillovers may depend on the particular outcomes used and the size of the distance bands. For example, positive effects on house prices within 500m are more likely to be positive externalities, whereas negative effects on jobs 3km away is more likely to be displacement. As with Analysis 1, however, displacement could occur from further afar still.

3. Local economy

Motivation: Measured effects using site or proximity to site analyses above may represent displacement from other locations in the Black Country or the West Midlands. An analysis at the Black Country, and/or West Midlands level is important to capture the net effect on the local economy. Furthermore, there may be important channels of impact that occur *only* at the local economy level. One example is if increases in the supply of land, housing and commercial space reduces rents and prices in the wider local economy. If this were the case, cheaper homes and offices may attract residents and businesses to the local economy, improving a range of economic outcomes.

Key outcomes: total business floorspace, total homes, jobs, employment, wages, GVA, productivity, population, and demographics.

Method: Given there is only one single treated area (either Black Country, or West Midlands), a 'synthetic control' approach is appropriate. The approach works by constructing a synthetic control that is a weighted average of unsupported areas. It does this by choosing the selection of unsupported areas and weights that delivers the best approximation of the treated area based on pre-treatment values for the outcome variable and other covariates. An indicative example is that the best synthetic control for West Midlands might be 50% of East Midlands, plus 35% of the North West, plus 15% of London. The synthetic control method can be implemented with packages in R and Stata. Care should be taken to ensure that the chosen areas really are unsupported, for example, that they are not implementing devolution deals that coincide with Fund investments. Thought should be given as to whether LEP or region is the best level for analysis. The region may capture a greater share of the net effect but it may be more difficult to create an appropriate synthetic comparator area. Further, the effect may be more diluted in the region, making it less likely that a statistically significant impact can be detected. LEPs might present difficulties if they overlap.

Interpretation: estimates should provide the net effects of the policy (to the extent that displacement from the rest of the UK is minimal). However, it may be difficult to demonstrate statistically significant effects on the wider local economy.

Reference for synthetic control method

Abadie, A., Diamond, A., & Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American statistical Association*, 105(490), 493-505.