

Multipliers from a large public sector relocation: the BBC's move to Salford

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Work in progress!

Results are not final and may change

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What I'm going to talk about

- **Summary**
- **Backstory: BBC thinking, timeline, locations**
- **Research design**
- **Results**

What we do

- **Public sector relocation:** high-profile aspect of “Levelling Up”
- Policy theatre, or serious place-placed policy?
- **We test the economic impacts of a very large relocation of knowledge-intensive activity:** BBC’s move to Salford in 2011
 - In effect, relocating / grafting on a cluster
- We use a synthetic control design on rich microdata, 1997-2017
- *NB* MediaCity is part of a larger, longer set of local interventions
 - We estimate BBC effect on top of this prior ‘regeneration’
 - We focus on ‘short run’ impacts on jobs, firms, wages + property prices
 - At the mo we don’t look directly at longer run impacts on productivity etc.

Motivation

- **Scale / mix.** Very large relocation by UK standards. Unusually, involved a) high-level functions, b) largely skilled, well-paid jobs
- **Great expectations.** Consultants suggested up to 15,000 job gains from the BBC move (National Audit Office, 2103)
- **Knowledge gaps.** Two ex-post studies, both with constraints:
 - **Forth (2017): before/after analysis.** Compares Greater Manchester (GM) to large UK cities, finds significant gains in radio, TV and film productivity and turnover. City-region data, no controls, right control group?
 - **Swinney and Piazza (2017): descriptive analysis.** Find job gains, suggests these are largely explained by creative firms moving within GM. No counterfactual.

Evaluation challenges

- An interesting case study, but also annoying
- **Only one treated location**
- **No runner-up location (outside GM).** BBC's approach was the opposite of e.g. Amazon HQ2, Channel 4 HQ2
- **Few potential control locations** (outside GM and London, the UK's main creative clusters) (Tether et al 2020, Gutierrez-Posada et al 2023)

Findings so far

- **Headline results:**
 - Each BBC job => 0.34 creative industries jobs in Salford, 2012-2017
 - Cumulative effect is larger: by 2017, 0.55 jobs created for each BBC job
 - These effect sizes are comparable to UK public sector multipliers over similar timeframes: these range from 0.21 - 0.55
 - No effect on tradables or on total employment
 - We also find higher average wages in Salford post-relocation
- **Drivers:** radio and TV activity; movers + entrants
- **Distributional impacts:** no apparent local displacement; no evidence of losses in London creative industries
- **Wider impacts:** adjacent sector effects marginal, no effects on property prices

Related literatures

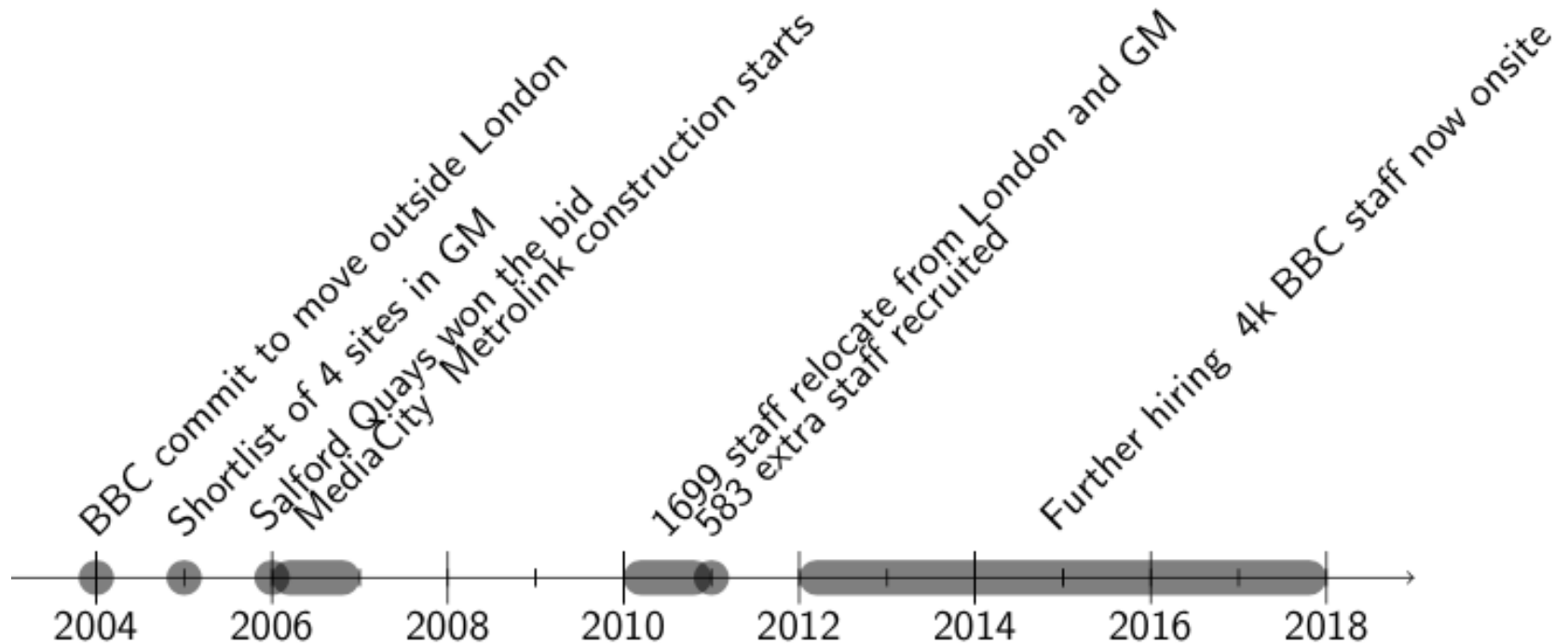
- **Directly observed multipliers.** Moretti (2010): each US high tech job supports ~4 local service jobs
- WWC (2019) OECD-wide review: ave multiplier from tradables = 0.9 local service jobs; tech = 2.5 local service jobs
- **Public sector multipliers.** Literature is a lot sparser
 - Becker et al (2021): relocation of Berlin ~> Bonn: each relocated public job supported 0.86 local service jobs, over 35-year period
 - Jofre-Monseny et al (2018): Spain, 0.9, 20-year period
 - Faggio (2019): UK, 0.55, local services, 4-year period
 - Faggio and Overman (2014): UK, 0.21, private sector, 4-year period
- **Seeding institutions.** Historical cases suggest long-run economic gains (Andrews 2023, Schweiger et al 2022, Kantor and Whalley 2019, Quigley et al 2004, and others)

Backstory

Context

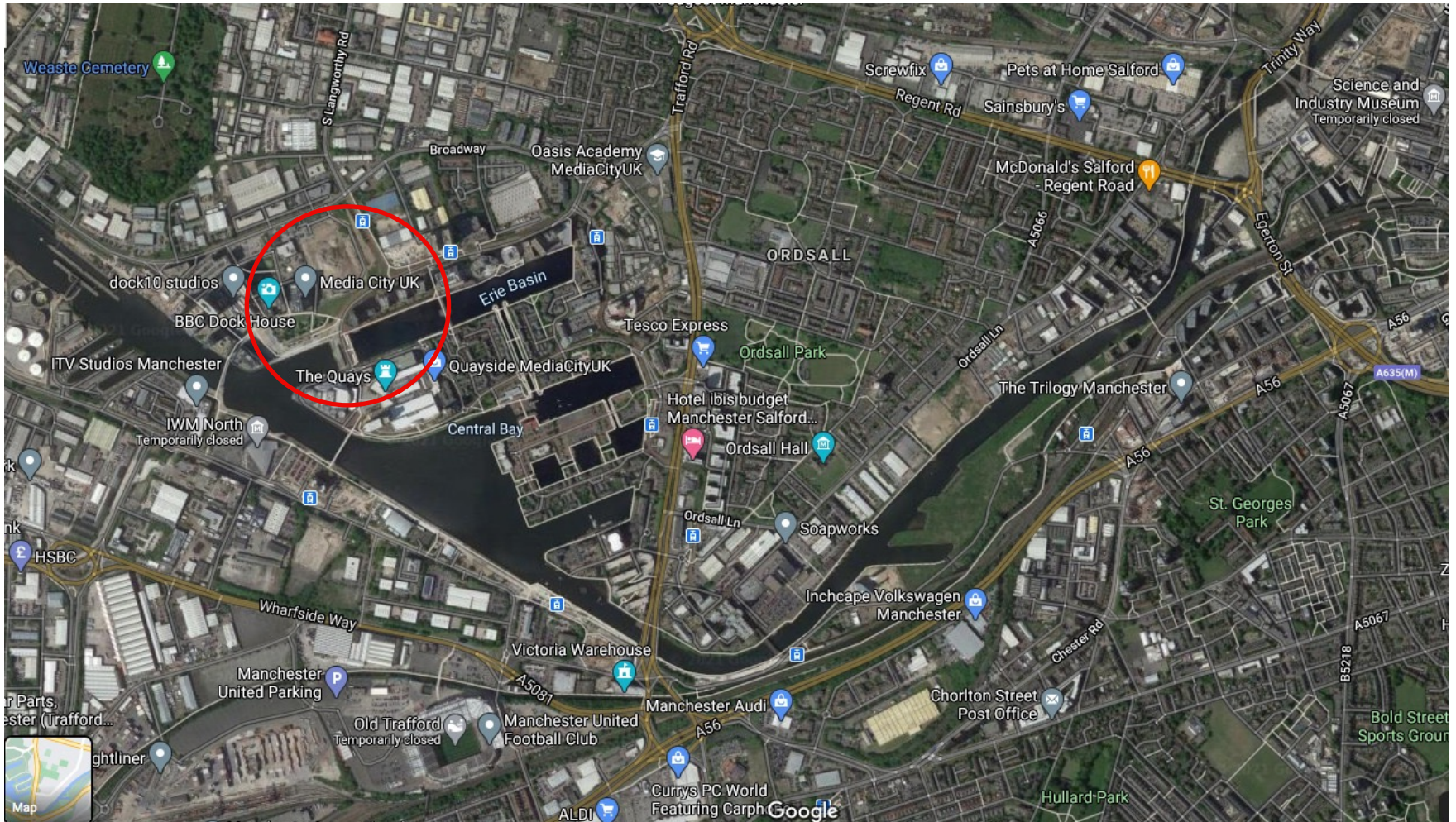
- The **British Broadcasting Corporation (BBC)** is the largest broadcaster in the world. >20,000 staff. Est 1922
- **Why decentralise? BBC aimed to** 1) better serve audiences in 'The North' by decentralising commissioning 2) improve quality via new tech / ways of working 3) bring economic benefits to 'the region' (National Audit Office 2013)
- **Functions:** BBC Breakfast, BBC Sport, Childrens' programming, BBC Learning, Marketing / Audience research, 5 Live, Future Media / Tech / BBC Academy (NAO 2013)
- **Jobs:** largely medium / high-skill roles *transferred*. FOI request shows >60% of *initial hires* were senior roles (Guardian, 2012)

Timeline



Extensive physical regen in Salford Quays from early 80s. By early 2000s, housing, amenities, Lowry and IWM North, plus Metrolink tram to the Quays - not MediaCity site (Schulze-Baeing and Wong 2018)

Locations



Design

Framework

- **Objectives of public sector relocations** are usually:
 - Cut property and salary costs, by moving jobs to cheaper locations
 - Stimulus via a) shifted jobs b) worker spending power c) supply chain links
 - Typically back-office roles: less F2F, less specialised (Nickson et al 2020)
- To formalise (a bit), we can adapt Moretti (2010):
 - **Direct effect** via relocated jobs
 - **Non-tradables effect** via worker spend, supply chains (+)
 - **Tradables effect** via supply chains, spillovers (+) vs. labour competition (-)
Spillovers more likely if tradables exhibit agglomeration, and/or sell locally
 - **Wider effects** on local wages, property markets if shock is 'large' (?)
 - **Distributional effects**: incumbents, local deadweight, sending location (?)

Framework (2)

- **BBC cites economic and quality goals, not cost savings**
 - Rationale is a) improvements in programming quality, b) economic benefits to the region, including via c) more external commissioning (NAO 2013)
 - But: BBC's own 'impact' measures are all inputs – not helpful
 - Based on Moretti, and on creative clusters literature, we'd expect indirect impacts to be: 1) focused on the creative industries and 2) (partly?) localised in Salford and contiguous LAs
- So in the paper we focus on
 - Effects on local creative jobs + firms in Salford (netting out the BBC)
 - Wider effects on adjacent tradable activity, e.g. tech, and total activity
 - Distributional effects within CE, across GM, and on London
 - Wider effects on local property market and wages

Data

- **Business Structure Database (BSD):** census of UK workplaces, covering 99% of economic activity in the UK
 - 1996-2017 panel, aggregated to local authorities [\[descriptives\]](#)
 - Firms and employment in 4-digit SIC2003 bins
 - Use DCMS definition of creative industries, crosswalk to SIC2003 [\[more\]](#)
 - Also look at tech sector, using Tech Nation definition [\[more\]](#)
- **Caveat:** the BSD excludes some self-employed workers, who are disproportionately in creative industries (35% vs 15% UK average). Implies **we may be under-estimating the effect** on creative industries activity
- We check self-employment impacts with APS data: no effect

Research design

- We want to identify **the effect of the BBC relocation in Salford, compared to a no-relocation counterfactual**
- **Difference-in-differences** – compare outcome changes in Salford vs. changes in similar control areas
- Why is that **problematic in this case?**
 - UK creative industries are very clustered, lots of persistence, London and G/Manchester two of the biggest clusters
 - Only Greater Manchester was considered for relocation
 - Only GM treated
- **Synthetic control** – weighted average of the 348 local authorities outside GM and London, that resembles Salford as closely as possible in the pre-treatment period

Synthetic control: basics

- The ATT α_1 for the treated area in year t is given by:

$$\alpha_{1,t} = Y_{1,t} - \sum_{j=2}^{J+1} w_j^* Y_{j,t} = Y_{1,t} - Y_{W^*,t}$$

- The optimal weights \mathbf{W}^* are chosen to minimize:

$$\| \mathbf{X}_1 - \mathbf{X}_0 \mathbf{W} \|_{\mathbf{V}}$$

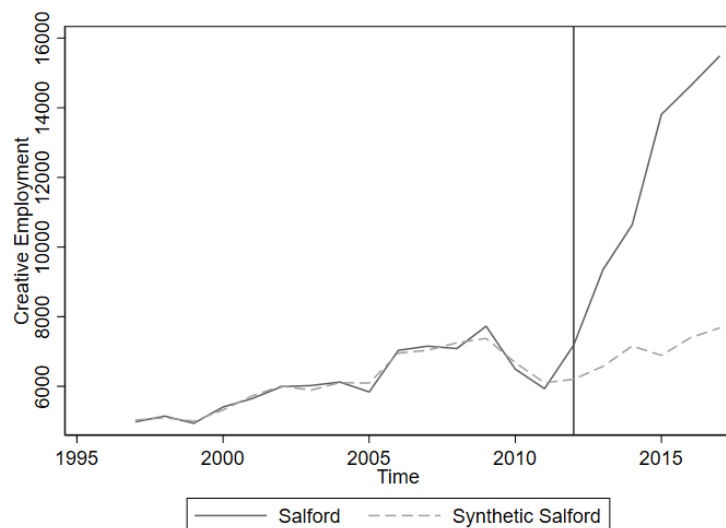
- \mathbf{X}_1 is a vector of pre-treatment outcomes for the treated location
 - \mathbf{X}_0 is a matrix of those outcomes for a donor pool of J control locations
 - \mathbf{V} denotes the relative importance of the pre-treatment outcomes \mathbf{X}
- Inference via permutation tests \Rightarrow p -value -type statistic [\[more\]](#)

Synthetic control: setup

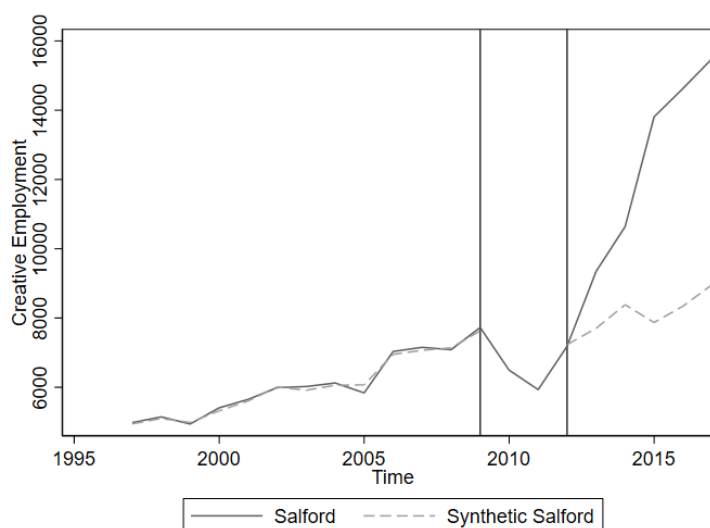
- **Donor pool:** 348 LAs in England and Wales. We exclude those in Greater Manchester (receiving) and Greater London (sending)
- Set the same **X** for each outcome. Pre-treatment values of:
 - Creative industries employment
 - Non-creative industries employment
 - Creative industries firm counts
 - Non-creative firm counts
- Set **V** to be an identity matrix, so each covariate has the same weight (Gobillon and Magnac 2016, Kaul et al 2017)
- Same predictors => **W*** , for all outcomes (Becker et al 2021)

Choosing the pre period

L: synthetic control, 1997-2011



R: synthetic control, 1997-2009



Source: BSD. Figures show trends in creative employment over total employment between actual Salford (solid line) and synthetic Salford (dashed line). In our data the treatment year is 2012. **Left panel** is raw specification, **right panel** is preferred specification. For visual comparison, we show the full time series for the treated unit.

Dip in years 2010-2011 (so, 2009-12 on the trendline)

Can't rule out Ashenfelter Dip / miscoding

Balance test

Outcome	Salford	UK LAD average		Synthetic Control	
		Controls	Difference	Control	Difference
Total employment	102,491	59,084	-43,407***	112,066	9,574
Creative employment	6,476	3744	2732***	7,614	-1,138
Non-creative employment	96,015	55,340	40,674***	104,452	-8,436
Creative firm size	845	729	116	992	-146
Non-creative firms	6,510	5,007	1502*	7,078	-568
Ave creative firm size	7.68	5.04	-2.65***	7.83	.143
Share of creative jobs (%)	6.26	6.00	-0.26	7.4	1.0

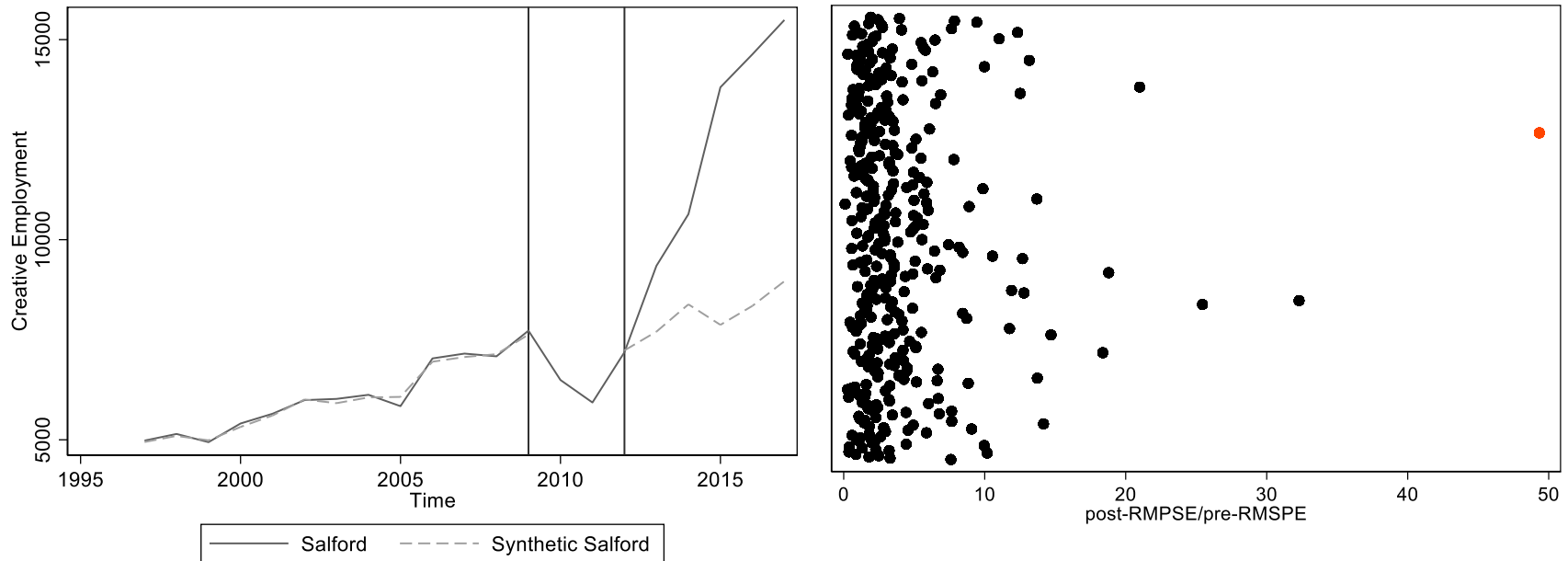
Notes: (1) Dataset: Business Structure Database (2) *: significant at 10% level, **: significant at 5% level, ***: significant at 1% level. (3) Predictors: Creative employment, non-creative employment, creative firms, non-creative firms, 1997-2011. UK LAD average excludes Greater Manchester and Greater London (n = 348).

Salford's creative economy \neq average UK LAD

The synthetic control makes these differences non-significant

Results

Main results (1)



Source: BSD.

The **left panel** shows the trends in creative employment between actual Salford and synthetic Salford. Because of the dip denoted by the two vertical lines, we drop 2010 and 2011 from our data when building the synthetic control. The BBC relocation occurs in BSD year 2012 (second vertical line).

The **right panel** depicts placebo tests and their goodness of fit, specifically the distribution of post-period error / pre-period error for Salford (red) vs all other local authorities in England (black). A higher ratio indicates better goodness of fit. The more placebos are fitted at least as well as the treatment, the more likely the treatment effect is just noise.

Main results (2)

Outcome	Period of predictors	Levels	Long diff	Obs
Creative employment	1997-2009	3744***	5889***	349
Total employment	1997-2009	-651	4309	349

Effects are gross additional jobs, including BBC jobs.

Between 2012 and 2017, creative industries job multiplier =
 $(3744 - 2800) / 2800 = 0.34$. By 2017: 0.55

Total employment multiplier is not significant.

Mechanisms (1)

Outcome	Period of predictors	Levels	Long diff	Obs
Creative employment	1997-2011	3744***	5889***	349
Share of creative employment over total	1997-2011	0.036***	0.053***	349

Average increase in Salford LA's creative jobs share is 3.6% points

Cumulative impact is 5.3% points, to just under 13%

Mechanisms (2)

Outcome	Period of predictors	Levels	Obs
Creative employment	1997-2009	3744***	349
Publishing/Broadcasting employment	1997-2009	3873***	349
Tech employment	1997-2009	1092*	349

Within the creative industries, the biggest change is in publishing and broadcasting (including the BBC)

Marginal effect on tech, no effect on tradables as a whole

Mechanisms (3)

Outcome	Period of predictors	Levels	Long diff	Obs
Creative employment	1997-2009	3744***	5889***	349
Number of creative firms (incl BBC)	1997-2009	224**	236	349
Average size of creative firms (excl BBC)	1997-2009	1.59**	1.99	349

~220 extra creative industries firms in Salford (including the BBC)

Excluding the BBC, creative industries firms added just over 1.5 worker on average

Robustness

- **Specification checks**
 - Different specifications of **V**
 - Different specifications of **W**, using cross-validation
 - Cross-check with SIC2007 codes, on 2007-2016 data
- **Placebo-in-time check**, using the announcement year (2006)
 - 2007-9: additional creative industries jobs, no effect on job shares or on firm outcomes [\[more\]](#)
 - 2007-9 + 2012-17: slightly lower point estimates, same significance
- Re-estimate main results using **difference-in-differences**: effects are ballpark similar, much less precise

Winners and losers

- **Incumbent firms' survival rate increases**, but no other consistently significant impacts [\[more\]](#)
 - So: main effects on jobs, firms come from movers + startups
 - Bulk of creative firms are incumbents. ~20% movers, ~1% entrants
- **Did the BBC displace activity in the city-region?** [\[more\]](#)
 - Betas => spillovers in contiguous LAs? Everything is non-significant
- **What about displacement from London?**
 - Re-run results on the LA where BBC White City was located. Noisy!
 - Find no local impacts, but again, effects may be dispersed London-wide
 - Given London's large creative economy, unlikely welfare effects are big

Wider impacts

- Outside of the creative industries, what about the wider local economy? We run two tests:
 - 1) **Wages** – we find a 9.4% rise in average weekly wages in Salford, up from £350/week. Taking out the effect of BBC jobs, this is an 8.7% rise, or about £30/week [\[more\]](#)
 - 2) **Property prices** – use Land Registry microdata to look at house price changes. No BBC effect on Salford or GM prices. Possible that effects are highly localised, or shift via rents

Conclusions

- Feels like a win-win!
 - Gains for Greater Manchester without losses for London (or rest of GM)
 - Creative sector grows and densifies; higher average wages
- But: halo effects seem limited so far
 - Predictions (15k new jobs) vs actual outcomes (~5.9k by 2017)
 - Big Push: doubtful a smaller move would have done much
 - Also, both size of move ~ fit to local economy (Nickson et al 2020)
- Caveats
 - Our analysis is short term. Studies from Germany, Spain suggest 20- or 30-year public sector multipliers are 2x bigger
 - We don't test for effects on innovation, productivity (except via wages)
 - We don't test for impacts on rents, or gentrification

Thanks!

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Appendix

Creative industries

Group	SIC(2007)	Description
1. Advertising and marketing	70.21	Public relations and communication activities
	73.11	Advertising agencies
	73.12	Media representation
2. Architecture	71.11	Architectural activities
3. Crafts	32.12	Manufacture of jewellery and related articles
4. Design: product, graphic and fashion design	74.10	Specialised design activities
5. Film, TV, video, radio and photography	59.11	Motion picture, video and television programme production activities
	59.12	Motion picture, video and television programme post-production activities
	59.13	Motion picture, video and television programme distribution activities
	59.14	Motion picture projection activities
	60.10	Radio broadcasting
	60.20	Television programming and broadcasting activities
6. IT, software and computer services	74.20	Photographic activities
	58.21	Publishing of computer games
	58.29	Other software publishing
	62.01	Computer programming activities
7. Publishing	62.02	Computer consultancy activities
	58.11	Book publishing
	58.12	Publishing of directories and mailing lists
	58.13	Publishing of newspapers
	58.14	Publishing of journals and periodicals
8. Museums, galleries and libraries	58.19	Other publishing activities
	74.30	Translation and interpretation activities
	91.01	Library and archive activities
9. Music, performing and visual arts	91.02	Museum activities
	59.20	Sound recording and Music publishing activities
	85.52	Cultural education
	90.01	Performing arts
	90.02	Support activities to performing arts
	90.03	Artistic creation
	90.04	Operation of arts facilities

Tech industries

SIC (2007)	Description
26.20	Manufacture of computers and peripheral equipment
58.21	Publishing of computer games
58.29	Other software publishing
61.10	Wired telecommunications activities
61.20	Wireless telecommunications activities
61.30	Satellite telecommunications activities
61.90	Other telecommunications activities
62.01	Computer programming activities
62.02	Computer consultancy activities
62.03	Computer facilities management activities
62.09	Other IT & computer service activities
63.11	Data processing, hosting & related activities
63.12	Web portals
95.11	Repair of computers & peripheral equipment

Summary statistics

Table: Main outcomes

Variable	mean	st. deviation	min	max
Creative empl	2838.096	2915.948	397	24666
Total empl	60452	50403	12160	457218
Creative firms	569.44	462.67	63.80	3013
Av. size of firms	5.00	3.40	2.6	12.43
Share creative sector	0.044	0.019	0.018	0.184

Note: all variables are averaged for the 1996-2011 period

Inference

- Inference uses placebo-in-space tests based on the RMSPE, the standard goodness of fit metric for synthetic control (Abadie 2015)
- The test statistic p is set for the 348 donor pool LAs:

$$p = \frac{\sum_{j=2}^{J+1} \mathbb{I}[RRMPSE_j \geq RRMPSE_T]}{348}$$

- RRMSPE is the ratio of post- goodness of fit / pre- goodness of fit
 - p gives the share of donor LAs where ‘treatment’ is better fitted than in Salford
 - We interpret p as a p -value (i.e. shares under 10%, 5%, 1%).
- Intuitively, this gives a level of confidence that the treatment effect comes from the treatment, rather than from noise.

Synth weights

Local authority	Synthetic control weight
Halton	0.082
Derby	0.012
Telford and Wrekin	0.111
Southend-on-Sea	0.055
Slough	0.005
Wokingham	0.014
Southampton	0.050
Copeland	0.001
Rushmoor	0.002
Rossendale	0.041
Lincoln	0.040
South Oxfordshire	0.039
Waveney	0.127
Worthing	0.018
Liverpool	0.104
Sefton	0.001
Newcastle upon Tyne	0.019
Sandwell	0.076
Leeds	0.034
Wakefield	0.011
Antrim and Newtownabbey	0.002
Belfast	0.093
Dundee City	0.061

Anticipation

Specification	Period of impact calculated	Period of predictors	Levels	Obs
A. Anticipation effects				
Creative employment	2007-2009	1997-2006	1025.66** (0.020)	349
Share creative jobs	2007-2009	1997-2006	0.011 (0.564)	349
Number of creative firms	2007-2009	1997-2006	-14.79 (0.447)	349
Ave creative firm size	2007-2009	1997-2006	1.59 (0.183)	349
Total Employment	2007-2009	1997-2006	1784.32 (0.304)	349
B. Cumulative effects				
Creative employment	2007-2009 / 2012-17	1997-2006	3237.762*** (0.000)	349
Share creative jobs	2007-2009 / 2012-17	1997-2006	0.031* (0.037)	349
Number of creative firms	2007-2009 / 2012-17	1997-2006	126.40* (0.040)	349
Ave creative firm size	2007-2009 / 2012-17	1997-2006	2.352* (0.034)	349
Total Employment	2007-2009 / 2012-17	1997-2006	2400.06 (0.241)	349

Incumbents

Specification	Period of impact	Period of predictors	Levels	Obs
Creative employment	2012-2017	1997-2009	55.01** (0.043)	349
Creative firms	2012-2017	1997-2009	27.98*** (0.003)	349
Ave creative firm size	2012-2017	1997-2009	-0.909 (0.309)	349

Incumbents defined as firms present in Salford in or before 2011

Creative employment effect is non-significant when we exclude incumbents who moved out after 2011, then returned

Increase in firm counts => higher survival rate than in no-BBC counterfactual

Rest of GM effects

Local authority	Period of predictors	Creative jobs	Share creative	Creative firms	Average creative firm size
Bolton	1997-2009	803.30 (0.819)	0.014 (0.407)	-111.10 (0.490)	1.633 (0.516)
Bury	1997-2009	400.92 (0.539)	0.0028 (0.814)	42.05 (0.415)	0.510 (0.880)
Manchester City	1997-2009	7638.62 (0.215)	0.151 (0.871)	519.94 (0.301)	0.489 (0.450)
Oldham	1997-2009	433.49 (0.716)	0.0049 (0.633)	-35.47 (0.621)	0.937 (0.507)
Rochdale	1997-2009	26.53 (0.934)	0.0021 (0.642)	-30.93 (0.682)	0.087 (0.814)
Stockport	1997-2009	-548.82 (0.418)	-0.0014 (0.656)	-144.96 (0.713)	0.228 (0.885)
Tameside	1997-2009	-318.72 (0.530)	-0.0025 (0.430)	-48.55 (0.507)	-0.163 (0.470)
Trafford	1997-2009	1579.73 (0.745)	0.007 (0.923)	-40.51 (0.994)	1.412 (0.699)
Wigan	1997-2009	-457.56 (0.481)	-0.003 (0.481)	-32.71 (0.880)	-0.219 (0.496)

Not BOZ, but everything is non-significant

Betas are positive in LAs contiguous to Salford (Manchester City, Trafford)

Wages

Outcome	Period of predictors	Treatment effect	Obs
LA base hourly earnings (£)	1997-2009	0.736 (0.113)	337
LA base weekly earnings (£)	1997-2009	32.81* (0.077)	337

We find a roughly 9.4% increase in weekly earnings (£33) compared to the pre-period Salford mean of £350.

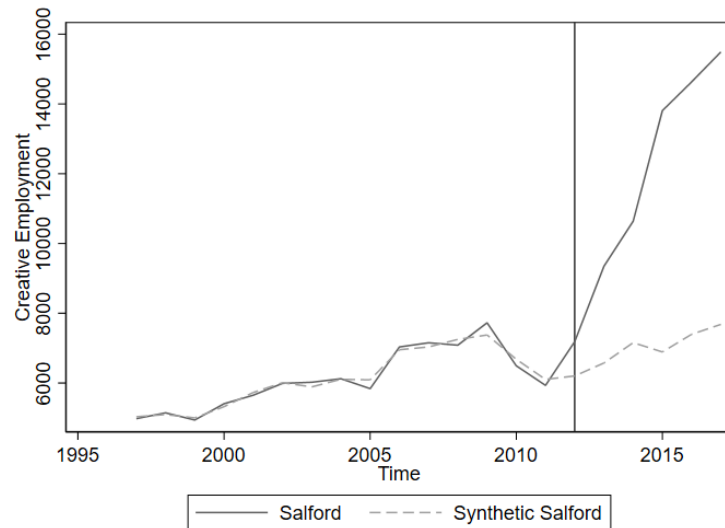
We worry this is purely driven by higher-paid BBC jobs. We do a back-of-the-envelope exercise to (roughly) exclude the effect of BBC jobs. Current estimates => weekly wage rise without the BBC is 8.69%, not 9.4% (so an extra ~£30/week)

Where we start

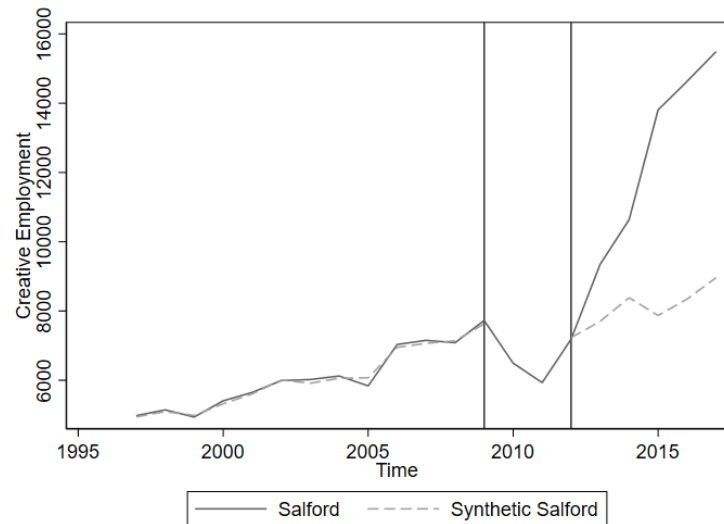
- **Large, persistent economic disparities between places**
 - Tech and creative activities highly clustered (Andrews and Whalley 2023, Kerr and Robert-Nicoud 2021, Tether et al 2020)
- **Recent revival of industrial strategy, place-based policies**
(Juhasz et al 2023, Suedekum 2023, Bryan and Williams 2021, Mazzucato 2013, Rodrik 2004)
- **Seeding / relocating institutions, as part of the policy mix?**
 - In the UK, focus on public sector relocation – as part of ‘Levelling Up’
 - Historical cases suggest seeding / moving institutions can have long-term economic gains (Andrews 2023, Schweiger et al 2022, Becker et al 2021, Kantor and Whalley 2019, Moretti and Kline 2014, Quigley et al 2004)

The Dip

L: synthetic control, 1997-2011



R: synthetic control, 1997-2009



Source: BSD. Figures show trends in creative employment over total employment between actual Salford (solid line) and synthetic Salford (dashed line). In our data the treatment year is 2012. The left panel shows the basic setup, with all pre-treatment years used for the synthetic unit. The right panel shows our preferred specification, with dip years 2010 and 2011 dropped from the analysis for both treated and control units. For visual comparison only, here we show the full time series for the treated unit.

Dip in years 2010-2011 (so, 2009-12 on the trendline)

Can't rule out Ashenfelter Dip / miscoding