Leeds University Business School

UNIVERSITY OF LEEDS

Assessed Coursework Coversheet

For use with *individual* assessed work

Student ID Number:	2	0	1	5	9	6	9	1	8
Module Code:	LUBS43001								
Module Title:	Economics Research Methods								
Module Leader:	Dr Peter Howley								
Declared Word Count:	2483								

Please Note:

Your declared word count must be accurate, and should not mislead. Making a fraudulent statement concerning the work submitted for assessment could be considered academic malpractice and investigated as such. If the amount of work submitted is higher than that specified by the word limit or that declared on your word count, this may be reflected in the mark awarded and noted through individual feedback given to you.

It is not acceptable to present matters of substance, which should be included in the main body of the text, in the appendices ("appendix abuse"). It is not acceptable to attempt to hide words in graphs and diagrams; only text which is strictly necessary should be included in graphs and diagrams.

By submitting an assignment you confirm you have read and understood the University of Leeds **Declaration of Academic Integrity** (http://www.leeds.ac.uk/secretariat/documents/academic_integrity.pdf).

The Preston Model: A difference-in-differences analysis to verify the theoretical underpinnings of Community Wealth Building

Background

The city of Preston, prior to their implementation of Community Wealth Building (CWB) – the precise nature of which is now known as the Preston Model (Preston City Council, 2019) – suffered from a variety of detrimental health and economic problems.

What Problems was Preston Experiencing?

In 2010, 2-3 years prior to the implementation of CWB, the median Lower layer Super Output Area (LSOA) (an LSOA is a collection of typically four or five Output Areas (OAs) which are the lowest level of geographical area for census statistics; an LSOA will typically contain 1,000-1,300 residents (Office for National Statistics, 2023)) in Preston ranked in the bottom 40% on the Index of Multiple Deprivation (IMD), as seen in Table 1 and Table 2.

Decile	UK 2010 IMD Distribution
1	5.77
2	8.49
3	10.99
4	13.79
5	17.25
6	21.35
7	26.77
8	34.17
9	44.88
10	87.80

Table 1 - Distribution of the UK's Index of Multiple Deprivation scores as deciles, where a higher score indicates a higher level of relative depravation.

Quartile	Preston 2010 IMD Distribution
Minimum	4.88
First Quartile	11.40
Median	25.42
Third Quartile	40.45
Maximum	75.04

Table 2 - Distribution of Preston's Index of Multiple Deprivation scores as quartiles.

Preston also had an unusually high rate of male suicidality, self-harm-related hospital admissions, eating disorders, etc., for its local area in 2012 (Lancashire JSNA, 2012, pp. 13, 24, 39). Its most deprived districts also featured in the bottom quintile nationally for child wellbeing (*ibid*, p. 58). Economic problems were further exacerbated when the £700mn Tithebarn regeneration project, proposed in 2005 and meant to bring investment and new jobs to the area, was scrapped in 2011 (Preston City Council, 2019). The local government decided to look towards Community Wealth Building to provide employment to ease poverty and other health issues.

What is Community Wealth Building (CWB)?

CWB aims to keep local wealth from leaving the city and maximise the social value of what that wealth can produce. The city council forms an "anchor network" with "anchor institutions" where all parties agree to uphold certain key values (Preston City Council, 2019, p. 8):

1. Paying a living wage,

2. Progressive procurement,
    a. Contracts awarded to firms should ideally be split up to be available to SMEs.
    b. Procurement should begin locally.
3. Considering not just the economic but also social value of employment, investments, and land use.

The term “anchor institution” refers to large-scale, local employers who are “often tied to a place by their mission, physical assets and local relationships.” (Preston City Council, 2019, p. 10) Examples can include local authorities, NHS trusts, or large local businesses (*ibid*, p.10).

After an initial investigation in 2012, it was discovered that, of the £750mn spent by anchor institutions in Preston, only “5% of it was spent with organisations based in the Preston boundary, with 39% spent with organisations based in wider Lancashire.” (*ibid*, p.11) In total, over $458mn was leaving the Lancashire economy. By 2016/17, after the implementation of CWB by the Preston City Council and Lancashire City Council, locally retained spending in Preston increased to 18.2% and in Lancashire increased to 79.2% (*ibid*, p.11).

New anchor networks have been established by multiple other city councils, including Birmingham, Oldham, Salford, Kirklees, Islington, Enfield, Southampton, Wakefield, Bristol (Preston City Council, 2019) and Leeds (Leeds City Council, n.d.).

Has the Preston Model helped Preston?

One paper, published in 2023 by Rose et al., has examined the Preston Model using a difference-in-differences analysis coupled with a synthetic control methodology. It found that Preston’s CWB has had statistically significant, positive effects on antidepressant prescriptions, depression diagnoses, life satisfaction scores, and median wages when compared to control cities. However, most of these parameters did not display statistically significant difference from the control pool in the final year of analysis, 2019, seen in Figure 1 and Figure 2.

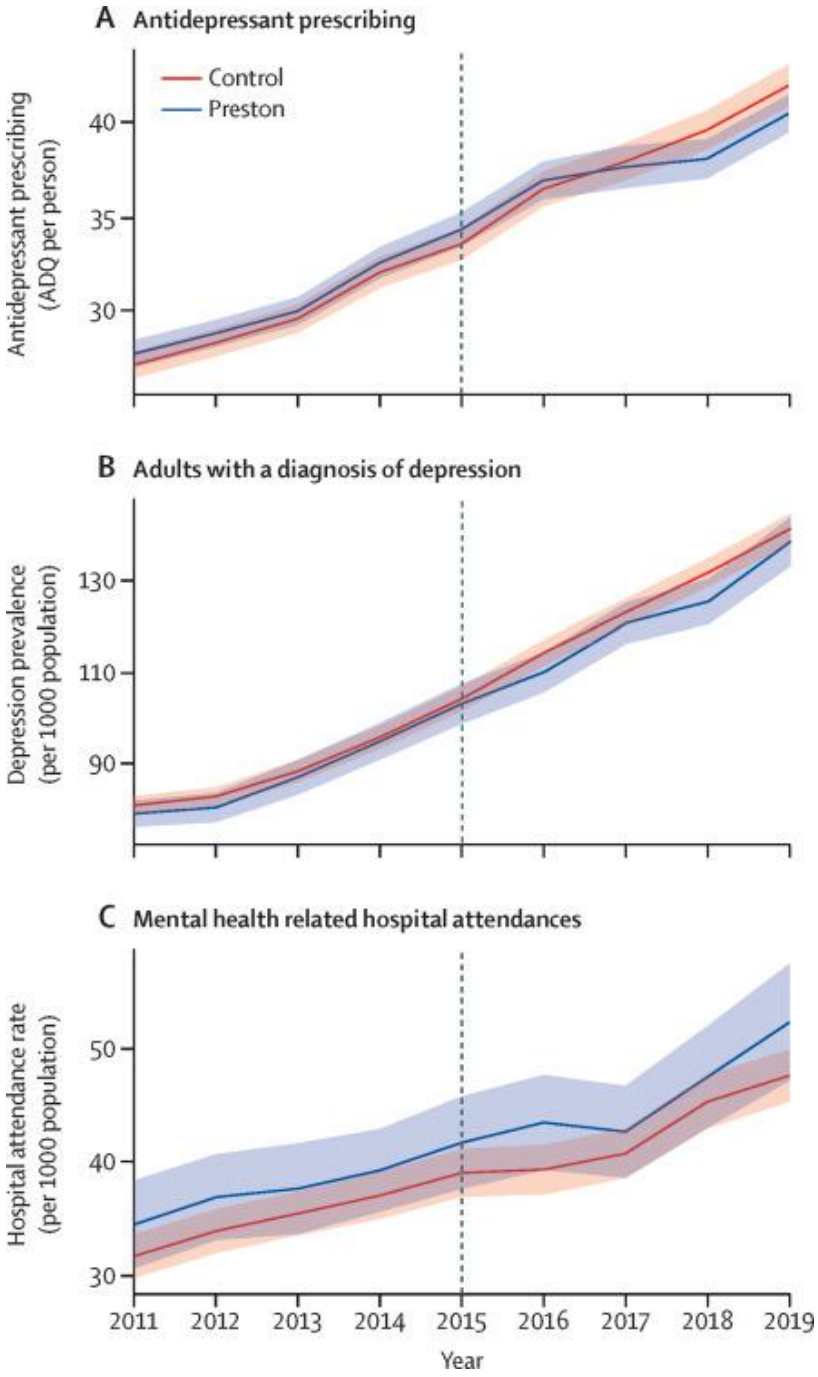

Figure 1 - (Rose, et al., 2023)

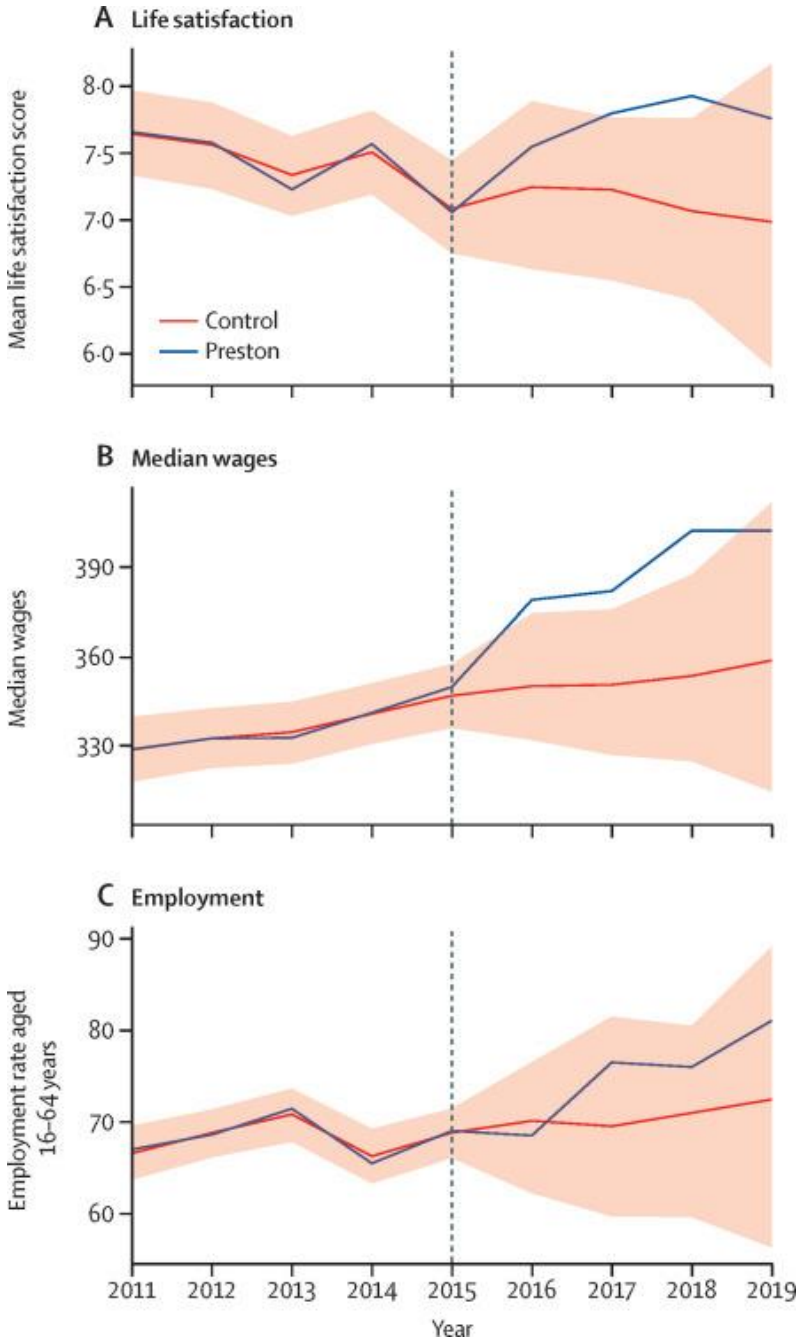

Figure 2 - (Rose, et al., 2023)

Furthermore, Whyman (2021) has published literature justifying the theoretical economic foundations of the Preston model, arguing that CWB falls within existing British values being pushed by Westminster, e.g., Whyman (2021, p. 137) suggests that CWB should theoretically enhance competition, stamp out rent-seeking and move the market closer to the social optimum. Whyman (2021, p. 142) also suggests that the evidenced economic impacts CWB has had, namely the growth of local procurement in Preston and Lancashire, should be indirectly corroborated by factors such as "growth rates, employment opportunities and human capital investment."

Rationale

As it stands, the existing scope of research is too narrow: such a self-admittedly large shift in not only the role of local government, but also local private institutions and businesses, ought to be carefully considered. Moreover, no potential negative effects that critics associate with CWB have been analysed, e.g., increased costs, reduced competition, rent-seeking, etc. Even if, as Whyman (2021, p. 137) claims, the charge of local protectionism is "certainly not a straightforward conclusion to reach," the fact remains that local firms, given special priority over distant firms by virtue of their geographic location, extract economic rent (Fried & Bebchuk, 2004, p. 62). High rent tends to inhibit growth and innovation while increasing prices due to a misallocation of resources (Dabla-Norris & Wade, 2001; Murphy, Shleifer, & Vishny, 1993). This fact, coupled with the contentious view of the economic foundation of the Preston Model (The Economist, 2017) indicates that: first, further investigation is needed to specifically measure the veracity of Whyman's (2021) theoretical foundations and predictions; second, further investigation is needed to provide policy evaluations: if CWB harms the local economy, councils who have adopted CWB – and their residents – may be paying for economic rents, missing out on alternatives which could have offered a better chance at alleviating hardships.

Methodology

Conceptual Framework

The outcomes I will be testing for statistical significance are:

- GDP per capita,
- Rent as a proportion of GDP,
- UK Competitiveness Index,
- Council expenditure.

A difference-in-differences (DiD) methodology will be used to compare how the different outcomes stated above have been affected by CWB in Preston, with a separate regression model for each outcome. DiD uses a control to predict, to a reasonable degree of certainty, what would have happened in the treatment city had the intervention not taken place; this unobserved alternative-reality is known as the *counterfactual*. Knowing this we can measure the intervention effect.

The regression model I'll be using is a DiD multi-variate regression model, following the example set by Rose et al. (2023, Appendix, p. 8), Quan & Duan (2023, p. 7), and Wetwitoo & Kato (2019, p. 324). It is formulated as follows:

$$Y_{it} = \beta_1 + \beta_2 AFTER_t + \beta_3 PRESTON + \beta_4 AFTER_t * PRESTON + \epsilon_{it}$$

Where:

- Y_{it} is the outcome in city *i* at time *t* – this includes all outcomes mentioned prior.
- $PRESTON$ is a dummy variable taking the value 1 for Preston and 0 for all other cities.
- $AFTER_t$ is a dummy variable taking the value 1 for time periods after 2015.
- β_4 indicates the change in outcome in Preston relative to the change in outcome in the control areas – this is also known as the DiD parameter (Rose, et al., 2023, Appendix, p. 8)

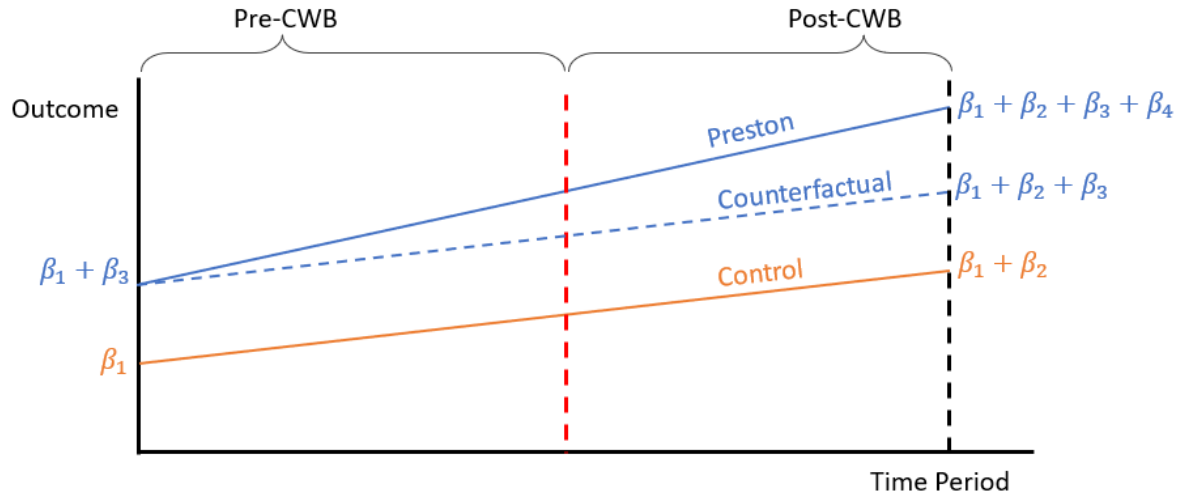

Figure 3 – Own illustration. Based on *(Statistical Modeling and Forecasting, 2022)*.

Figure 3 illustrates how β_4 captures the effect size in the DiD regression. Only two periods are being modelled as this yields more consistent results than extending the analysis to multiple years (Wetwitoo & Kato, 2019, p. 324).

The null hypothesis is:

H0: CWB has not affected Preston w.r.t. the outcomes detailed

The alternate hypothesis will be:

H1: CWB has affected Preston w.r.t. the outcomes detailed.

Results of the regression will be seen as significant where $p < 0.05$. The p-value is determined by the proximity of the treatment to the counterfactual, post-treatment - calculating the standard deviation of the counterfactual will be discussed later.

The advantage of a DiD analysis over a different sort of natural experiment, such as a before-and-after (BaA) analysis, is that a more realistic counterfactual can be approximated. A BaA analysis creates a counterfactual based on previous trends, and as such would have difficulty capturing a global economic shock, possibly misattributing this to the intervention effect of the treatment. This dichotomy is shown in Figure 4 and Figure 5.

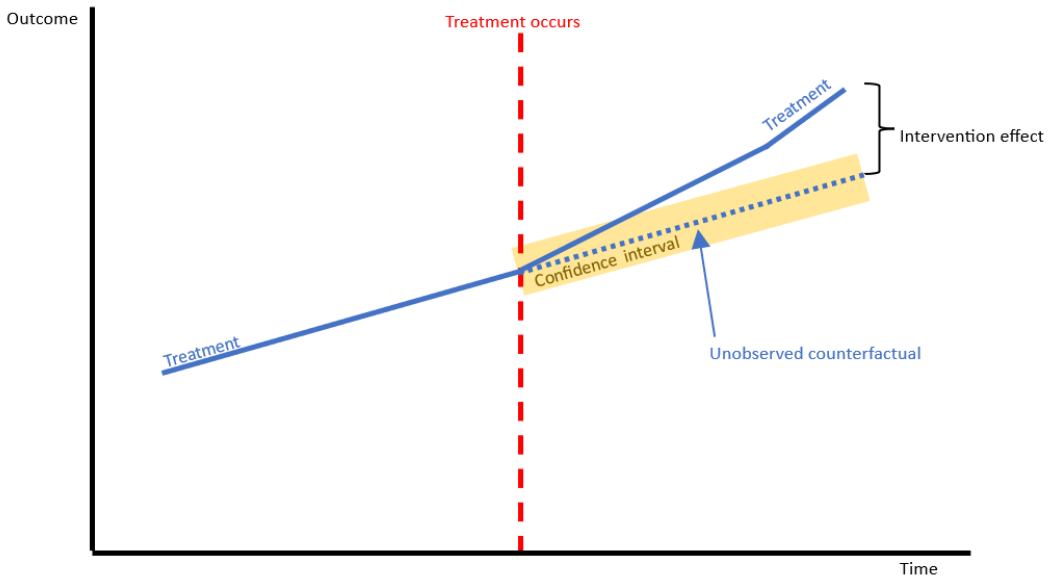

Figure 4 – BaA analysis of treatment with global shock

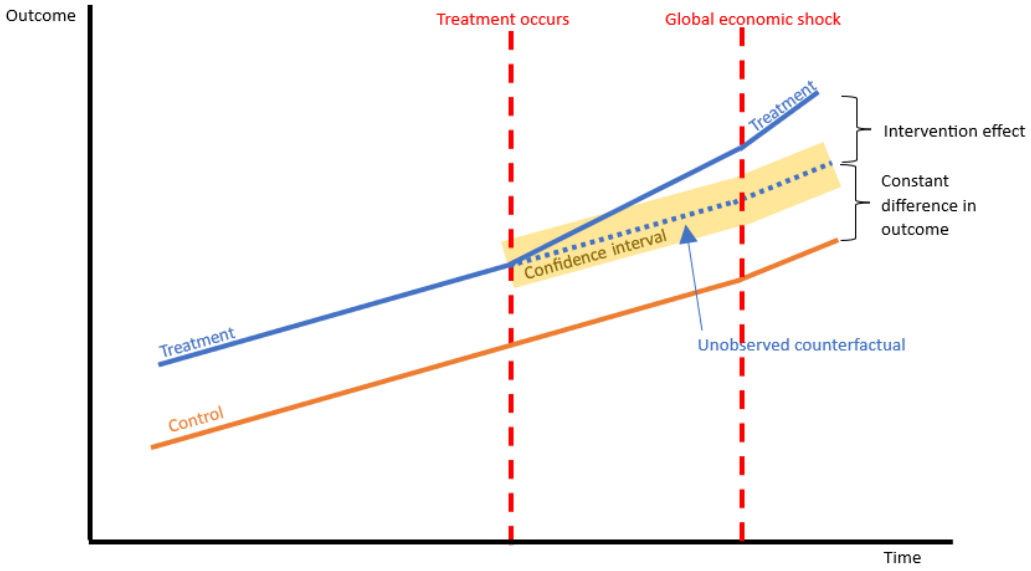

Figure 5 – DiD analysis of treatment with a global shock. The intervention effect is smaller than in Figure 4.

So, while DiD can produce a more accurate picture of the intervention effect, constructing the counterfactual requires finding a control which has parallel trends to the treated individual/group, and which reacts the same way to shocks. To generate a suitable control, I will be employing the synthetic control method proposed by Abadie (2021) and utilised by Rose et al. (2023, p. e405) in their original CWB study.

The method involves casting an initial wide-net to create a large "donor-pool" (Abadie, 2021, p. 394) made up of various cities. Each donor city j will be assigned a weight w_j based on a set of k observable predictors, a predictor being a metric which is highly associated with an outcome; for example, Abadie (2021, p. 399) posits trade openness, inflation rate, industry share, schooling, and investment rate as predictors for GDP per capita. Each of these predictors are also assigned a weight, v_k. All weights are generated using pre-treatment data. A similarity with Preston on weightier predictors will increase w_j more than similarities on lighter predictors. Once all city weights W have

been assigned, a weighted mean and variance is calculated from the donor-pool to produce a synthetic control. In the post-treatment period, it is this synthetic control, i.e., synthetic Preston, which we compare the real Preston against. $\beta_3 \approx 0$ for a successful synthetic control implementation, indicating low probability of selection bias (Wetwitoo & Kato, 2019, p. 324) possibly indicating that the parallel trends assumption is correct (Abadie, 2021, p. 397).

Data collection and outcome calculation

Data collection and calculations will be focused on:

1. Creating an adequate donor-pool,
2. Associating a set of predictors with each stated outcome,
3. Measuring the different outcomes, for synthetic and real Preston, for all time periods.

Creating the donor-pool

To create the initial donor-pool, Rose et al. (2023, p. e405) grouped all lower tier local authorities in northern or central England which, pre-treatment:

- Have a population between 90,000-250,000,
- Are within the 25% most deprived local authorities,
- Are not already working on a CWB programme.

This paper will use the same donor-pool, because, as seen in figure 4, Rose et al's (2023, p. e408) synthetic control lines up very closely with Preston pre-treatment, indicating a low β_3.

The donor-pool has 16 local authorities, shown in Table 3 and Figure 6.

Local Authority
Middlesbrough
Redcar and Cleveland
Stockton-on-Tees
Halton
Blackburn with Darwen
Telford and Wrekin
Chesterfield
Pendle
East Lindsey
Lincoln
Ashfield
Mansfield
Knowsley
St. Helens
Barnsley
Calderdale

Table 3 (Rose, et al., 2023, Appendix, p. 9)

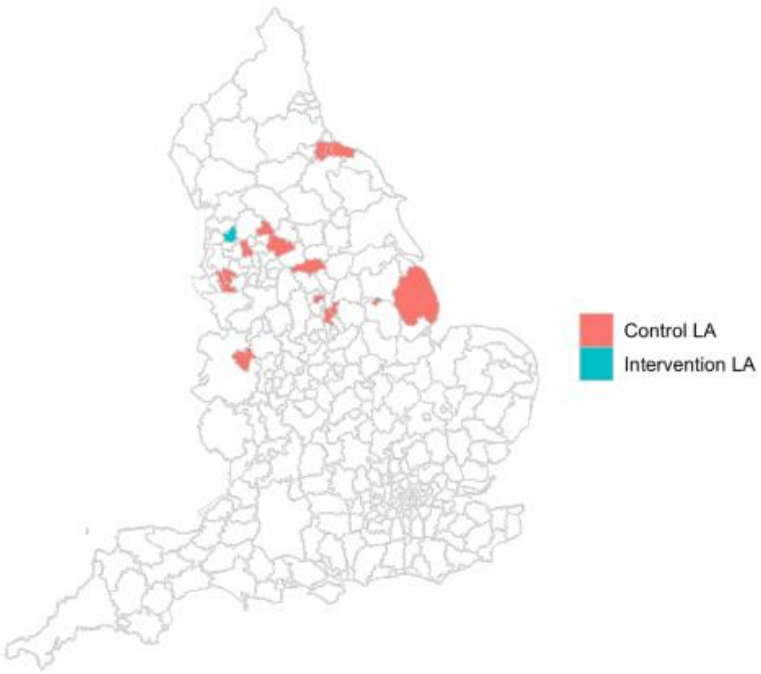

Figure 6 – LA stands for Local Authority (Rose, et al., 2023, Appendix, p. 9)

Predictors

To create the predictors for each outcome, I will take associations from existing economic theory and econometric literature. The layout will be as follows:

Outcome

Paper associating outcome with predictors

Predictor	Source

GDP per capita

(Abadie, 2021, p. 399)

Predictor	Source
Inflation rate	Available on a per city basis from (Centre for Cities, 2023)
Schooling	Available on per city basis (Centre for Cities, 2024).
Investment rate	$Investment\ rate = \frac{gross\ fixed\ capital\ formation}{gross\ value\ added}$ (Eurostat, 2023). Gross fixed capital formation data is available from the Office for National Statistics (2023) and gross value added data is available on a per city basis from most local authorities (Lancashire City Council, 2017).

Table 4

Rent as a proportion of GDP

(Dabla-Norris & Wade, 2001)

Predictor	Source
Rent as a proportion of GDP	Dabla-Norris & Wade (2001, p. 22) suggest that high rents encourage rent-seeking; consequently, rent levels adopt a recursive definition and use themselves as predictors.

Table 5

Competitiveness

(Quan & Duan, 2023, p. 5)

Predictor	Source
Gross Value Added	*See GDP per capita Investment Rate*
Operating profit	$Operating\ Profit = Gross\ value\ added - Investment - Employee\ compensation.$ *For GVA see row above. For investment see GDP per capita Investment Rate.* Employee compensation data per city is publicly available (Office of National Statistics, 2024; Office for National Statistics, 2018).
Population	Available on per city basis (Centre for Cities, 2024).
Employment	Available on per city basis (Centre for Cities, 2024).

Table 6

Council Expenditure

(Albassam, 2020, p. 8)

Predictor	Source
Economic Complexity	Economic complexity data can be accessed on a per city basis from Rodrigues & Breach (2021) and Mealy & Coyle (2019).
Human Development	*Unfortunately, human development numbers for Local Authority Units are not available, so council expenditure will only use two predictors.*
Unemployment rate	Available on per city basis (Centre for Cities, 2024).

Table 7

Outcomes

GDP per capita and UK competitiveness index will require very little calculation, as these figures are easily available and accessible in terms of local authorities (Office of National Statistics, 2024; Centre for International Competitiveness). Collecting council expenditure information is also trivial – it involves procuring the statement of accounts for Preston and each control city, for each of the years being analysed. This is publicly available information which every local authority must publish (Local Government Association, 2024).

I will employ the methodology laid out by Stemerding (2023) to calculate a city's economic rent as a proportion of GDP. Stemerding's (2023) method uses surplus cash flow as a proxy for rent. Surplus cash flow (SCF) is the difference between your actual return on investment and the normal return on investment, i.e.:

$$SCF = gross\ operating\ surplus - investment - normal\ return\ on\ investment$$

To calculate the normal return on investment (nROI), Stemerding (2023, p. 8) utilises the Capital Asset Pricing Model (CAPM), introducing $beta$, i.e., how strongly a firm's returns correlate with the business cycle, and introducing the risk-free rate (RFR), i.e., the safest return on investment, represented with a 10-year government bond (Stemerding, 2023, p. 8). The nROI is simply:

$$nROI = RFR + beta * (market\ rate - RFR)$$

I have collected all the variables necessary and corresponding data sources in Table 8.

Variable	Calculation	Source
Gross Operating Surplus	Gross Value Added minus Total Employee Compensation	Gross value added and average employee wages are provided by the ONS (Office of National Statistics, 2024; Office for National Statistics, 2018).
Investment	Also known as fixed capital formation (FCF) (Stemerding, 2023, p. 8)	Rates of FCF by local authority are provided by the ONS (Office for National Statistics, 2023).
Beta	A list of the top 5 industries most contracted by the city council in a city will be compiled, and those industries' beta will be found by matching with a list of known industry betas. A weighted average beta will then be calculated, where the weights corresponds to an industry's prevalence.	Betas for industries are provided by trading firms such as PwC. Procurement records are provided by local authorities (PwC, 2009; Lancashire City Council).
Risk free rate	This is the *investment* multiplied by a ten-year bond yield.	A ten-year government bond's yield can be found on many trading websites (Trading Economics, 2024).
Market Rate	Gross Operating Surplus minus Investment	*Already stated.*
Rent as a proportion of GDP	Surplus cash flow divided by Gross Value Added	*Already stated.*

Table 8

Strengths and Limitations

DiD analyses do suffer from unique drawbacks; for example, unobserved or unobservable differences between individual cities may mean that even with perfect pre-treatment parallel trends, serious bias could exist in post-treatment analyses. There are ways to control for these differences, which are commonly known as fixed effects; however, due to unfamiliarity with the methodology and time constraints I have not implemented them. A BaA could, conversely, control for fixed effects more easily as many unobserved values will stay constant in the same city.

Synthetic controls also presents some unique strengths and challenges. On the one hand, it presents clear advantages over other sorts of counterfactual generation, such as nearest neighbour or Propensity Score Matching (PCM), because the pre-treatment trends can be finetuned as to be sufficiently parallel (Abadie, 2021, p. 398). Furthermore, this finetuning eases the need to introduce controls in the DiD regression model as predictors of the outcome are already being controlled for. On the other hand, this finetuning may lead to high weights in some donor units leading to biased results. The many different methodologies for assigning predictor-weights also introduces possibilities for unintended bias. Robustness tests are typically run to check for unintended introduction of bias, and unfortunately the lack of these tests is likely the biggest weakness of this methodology.

Bibliography

Abadie, A. (2021). Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects. *Journal of Economic Literature*, 391-425.

Albassam, B. A. (2020). A model for assessing the efficiency of government expenditure. *Cogent Economics & Finance*.

Caliendo, M., & Kopeinig, S. (2008). SOME PRACTICAL GUIDANCE FOR THE IMPLEMENTATION OF PROPENSITY SCORE MATCHING. *Journal of Economic Surveys*, 31-72.

Centre for Cities. (2023, August 21). *Cost of living tracker*. Retrieved from Centre for Cities: https://www.centreforcities.org/data/cost-of-living-tracker/

Centre for Cities. (2024, Jan 24). *Data tool*. Retrieved from Centre for Cities: https://www.centreforcities.org/data/data-tool/

Centre for International Competitiveness. (n.d.). *Download Reports.* Retrieved from Centre for International Competitiveness: https://cforic.org/downloads/

Dabla-Norris, E., & Wade, P. (2001). *Rent Seeking and Endogenous Income Inequality.* IMF.

Eurostat. (2023, December 8). *Glossary:Business investment rate*. Retrieved from Eurostat Statistics Explained: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Business_investment_rate#:~:text=The%20business%20investment%20rate%20is,created%20during%20the%20production%20process.

Francis-Devine, B. (2024). *Poverty in the UK: Statistics.* London: House of Commons Library. Retrieved from https://researchbriefings.files.parliament.uk/documents/SN07096/SN07096.pdf

Fried, J., & Bebchuk, L. (2004). *Pay Without Performance: The Unfulfilled Promise of Executive Compensation.* Cambridge, Massachusetts: Harvard University Press.

Heinrich, C., Maffioli, A., & Vázquez, G. (2010). *A Primer for Applying Propensity-Score Matching.* Washington, D.C.: Inter-American Development Bank.

Lancashire City Council. (2017). *Gross Value Added*. Retrieved from Lancashire City Council: https://www.lancashire.gov.uk/lancashire-insight/economy/businesses-and-economic-wealth/gross-value-added-for-lancashire/#:~:text=Provisional%20gross%20value%20added%20(GVA,Manchester%20(%C2%A366.414%20billion).

Lancashire City Council. (n.d.). *Large employers.* Retrieved from Lancashire City Council: https://www.lancashire.gov.uk/lancashire-insight/economy/major-employers/major-public-and-private-sector-employers/

Lancashire JSNA. (2012, January). *Mental health and wellbeing in the Lancashire sub-region.* Retrieved from Intelligence for Healthy Lancashire: https://www.lancashire.gov.uk/media/899253/mental-health-and-wellbeing-jsna-final.pdf

Leeds City Council. (n.d.). *Leeds Inclusive Anchors Network*. Retrieved from Leeds Gov UK: https://news.leeds.gov.uk/leeds-spotlight/leeds-inclusive-anchors-network

Local Government Association. (2024, Feb 27). *Must know guide: The statement of accounts*. Retrieved from Local Government Association: https://www.local.gov.uk/publications/must-know-guide-statement-accounts#the-purpose-and-legislative-background-to-the-annual-statement-of-accounts

Mealy, P., & Coyle, D. (2019). *Economic Complexity Analysis.* Manchester: Greater Manchester Independent Prosperity Review.

Murphy, K. M., Shleifer, A., & Vishny, R. W. (1993). Why Is Rent-Seeking So Costly to Growth? *The American Economic Review*, 409-414.

Office for National Statistics. (2018, May 24). *Annual Survey of Hours and Earnings (ASHE) place of work by local authority annual timeseries.* Retrieved from Office for National Statistics: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/adhocs/008485annualsurveyofhoursandearningsasheplaceofworkbylocalauthorityannualtimeseries

Office for National Statistics. (2023, October 26). *Area type definitions Census 2021*. Retrieved from Office for National Statistics: https://www.ons.gov.uk/census/census2021dictionary

Office for National Statistics. (2023, December 08). *Experimental regional gross fixed capital formation (GFCF) estimates by asset type.* Retrieved from Office for National Statistics: https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/datasets/experimentalregionalgrossfixedcapitalformationgfcfestimatesbyassettype

Office of National Statistics. (2024, April 24). *Regional gross value added (balanced) by industry: city and enterprise regions.* Retrieved from Office for National Statistics: https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/regionalgrossvalueaddedbalancedbycombinedauthoritycityregionsandothereconomicandenterpriseregionsoftheuk

Preston City Council. (2019, May). *How we built community Wealth in Preston.* Retrieved from Preston City Council: https://www.preston.gov.uk/media/1792/How-we-built-community-wealth-in-Preston/pdf/CLES_Preston_Document_WEB_AW.pdf?m=1563809932893

Preston City Council. (2019). *What is Preston Model?* Retrieved from Preston City Council: https://www.preston.gov.uk/article/1339/What-is-Preston-Model

PwC. (2009, March). *How vulnerable are different industry sectors to the downturn?* Retrieved from PricewaterhouseCoopers: https://pwc.blogs.com/files/ukeo-section-iii-sector-vulnerability-march-2009.pdf

Quan, Y., & Duan, M. (2023). Emissions reductions, industrial competitiveness, and spillover effects under China's regional emission trading systems: Evidence from the iron and steel sector. *Journal of Environmental Management*.

Rodrigues, G., & Breach, A. (2021, September 22). *What levelling up really means: changing the geography of knowledge*. Retrieved from Centre for Cities: https://www.centreforcities.org/reader/what-levelling-up-really-means/the-geography-of-economic-complexity-in-britain/

Rose, T., Daras, K., Manley, J., McKeown, M., Halliday, E., Goodwin, T. L., . . . Barr, B. (2023). The mental health and wellbeing impact of a Community Wealth Building programme in England: a difference-in-differences study. *The Lancet Health*, E403-E410.

Statistical Modeling and Forecasting. (2022). *Introduction To The Difference-In-Differences Regression Model*. Retrieved from Statistical Modeling and Forecasting: https://timeseriesreasoning.com/contents/introduction-to-the-difference-in-differences-regression-model/

Stemerding, A. (2023). A method for measuring rents. *Cambridge Journal of Economics*, 747-762.

The Economist. (2017, October 21). Preston, Jeremy Corbyn's model town. *The right way to help declining places*.

Trading Economics. (2024, May 10). *UK 10 Year Gilt Bond Yield*. Retrieved from Trading Economics: https://tradingeconomics.com/united-kingdom/government-bond-yield#:~:text=The%20UK%2010%20Year%20Gilt%20Bond%20Yield%20is%20expected%20to,4.14%20in%2012%20months%20time.

UK Government. (2011, March 24). *English indices of deprivation 2010*. Retrieved from UK Government: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2010

UK Government. (2015, September 30). *English indices of deprivation 2015*. Retrieved from UK Government: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015

UK Government. (2019, September 26). *English indices of deprivation 2019*. Retrieved from UK Government: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

Wetwitoo, J., & Kato, H. (2019). Regional and Local Economic Effects from Proximity of High-Speed Rail Stations in Japan: Difference-in-Differences and Propensity Score Matching Analysis. *Transportation Research Record: Journal of the Transportation Research Board*, 323-333.

Whyman, P. (2021). The economics of the Preston Model. In J. Manley, & P. Whyman, *The Preston Model and Community Wealth Building.* London: Routledge.