Can city deals improve economic performance? Evidence from England

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City deals – place-based agreements between central and local state actors – are an increasingly common intervention for supporting economic performance in urban areas. This paper presents empirical evidence on the effectiveness of city deals by estimating the impact of the UK's City Deals scheme on rates of economic growth, productivity and job creation across England between 2010 and 2019. Because the City Deals were introduced in two waves, we estimate its effects using Callaway and Sant'Anna's (2021) Differences-in-Differences (DiD) with Multiple Time Periods (MTPs) approach. Our DiD estimates indicate that, overall, the City Deals were associated with improvements in local economic performance, but that the first wave of city deals resulted in gains of around 2.5-3% that were not observed in the second wave. These results suggest that city deals are most effective when appropriate institutional structures are in place and highlight the value of MTP approaches.

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Introduction

City deals – negotiated central–local government agreements on decentralised powers, responsibilities and resources, are an increasingly common tool of economic development policy in Western Europe and North America (Brazil and Portier 2022; Evers, Dignum, and Hamers 2021; Pill et al. 2020; Soininvaara forthcoming; Waite and Morgan 2019). Central to most city deals is the assumption that place-based growth policies can result in improved economic competitiveness by unlocking the endogenous growth potential within cities and city-regions (O'Brien and Pike 2019). Due to information asymmetries and better understanding of priorities on the ground, locally-led actions to build vital physical infrastructure, stimulate innovation and encourage business development are thought to be more effective vehicles for delivering growth than top-down directives from central government agencies (Cabinet Office 2011; Clarke and Cochrane 2013). These arguments about the significance of local action comport with insights from regime theory regarding the potential for pro-growth coalitions of local state and non-state actors to generate better economic outcomes (Logan, Whaley and Crowder 1997). One high-profile example of a city deal programme intended to achieve better economic performance is the UK city deals scheme, which involved the negotiated transfer of significant resources from central government to coalitions of local state actors responsible for co-ordinating economic development across England (and later Scotland and Wales).

The development of city deals has formed part of a broader trend towards dealmaking in central-local relations in England, which has sought to advance the decentralization of policy-making and implementation from central to local actors through devolution deals, growth deals and town deals (Sandford, 2017). The multiplicity of deals signed by English local authorities during the last two decades have facilitated the devolution of funding to support place-based economic development. This process has simultaneously involved the

rescaling of urban governance to the city-regional level in line with functional economic geographies (Martin et al. 2016), especially through the creation of combined authorities, supralocal governments responsible for economic policy within constituent local governments (Pill and Gurran forthcoming). Local government in England has had little choice but to engage with this dealmaking activity and the new structures of city-regional governance, given the significant budget cuts it experienced in the 2010s (Waite, Maclennan and O'Sullivan, 2013). As such, questions remain about the extent to which city deals really do amount to devolution and whether they have resulted in greater genuine local autonomy, especially as the dealmaking approach within post-2010 localism has led UK central government to circumscribe the autonomy of local actors within tight parameters that have tightened as time passed (Davoudi and Madinpour, 2015; Tait and Inch, 2016). At the same time, though, the rhetoric and normative appeal of decentralizing budgets within the context of the long over-centralized English governmental system and persistent uneven regional development has motivated many local actors to engage with deal-making in the hope of securing greater autonomy (Pike et al. 2016).

English city deals were rolled out in two waves: the first wave of city deals, negotiated in 2012, provided about £2.3 billion of funding to eight metropolitan city-regions for a twenty-year period from 2013. The second wave of city deals, negotiated in 2014, provided an undisclosed amount of funding to twenty further city-regions from 2015. A third wave of eight city deals were agreed with Scottish and Welsh cities in successive years (Ward, 2023). In England, the city deals were agreed on a competitive contractual basis, which included a requirement that the city-regions commit to governance structures capable of co-ordinating a partnership approach to the implementation of activities to promote local economic performance (O'Brien and Pike 2019). The governance models adopted for the local co-ordination of city deals have varied considerably, with some city-regions operating

under the auspices of statutory combined authorities or joint committees, while others operate through economic boards and partnerships (O'Brien and Pike 2015).

This paper focuses on three key indicators for evaluating the success of the city deals scheme in England: namely, economic growth, measured using Gross Domestic Product (GDP) figures; economic productivity, measured using Gross Value Added (GVA) figures; and, job creation, measured using employment figures. Notwithstanding the debates about the merits of GDP as an indicator of economic growth (Landefeld, Seskin, and Fraumeni 2008), the expansion of economic output is still regarded as a fundamental goal for governments across the globe (OECD 2021a). Economic growth can raise communities out of poverty (Roemer and Gugerty 1997), underpin significant investment in healthcare, education and other important public goods (Ranis, Stewart, and Ramirez 2000), and institute a virtuous cycle of social and economic innovation that spurs sustainable endogenous growth in the long run (Aghion et al. 1998). Likewise, although concerns about GVA as a measure of economic productivity persist (OECD 2021b), estimates of the net value created (or lost) by producers, industries and sectors nonetheless represent an important indicator of economic performance (O'Mahoney and Timmer 2009). Job creation is a key aim of place-based growth policies, especially in regions with high unemployment (Bartik 2020). Besides its immediate contribution to the economic welfare of local people, the creation of new jobs can promote sustainable growth by boosting skills development, encouraging entrepreneurship and enhancing social cohesion (OECD 2014). Importantly, because data on GDP, GVA and employment are published at the local level by UK's Office for National Statistics, we are able to utilise these indicators to identify the effects of participation in the city deals scheme on economic performance.

Place-based growth policies, such as city deals, can be characterised as strategic funding interventions aimed at addressing uneven patterns of economic growth within and

across the cities and regions within a country (Duranton and Venables 2018; Neumark and Simpson 2015). Prior research on place-based deals, such as the Community Development Block Grants scheme in the US, Urban Development Agreements in Canada and the Better Cities program in Australia, suggests that they can be an effective means for identifying and responding to complex contextual factors (Pill et al. 2020). However, to date, systematic empirical research on the effectiveness of city deals is surprisingly scarce, especially given the large sums of money often involved.

A preliminary evaluation report of the first wave of the UK city deals focused on governance steps and processes suggested that it may have been effective in spurring local state actors to move forward with infrastructure investments (see, National Audit Office 2015). However, this report did not address economic performance indicators. A number of city regions have subsequently been through gateway reviews, short, focused, independent reports on progress delivering economic development, but these have relied upon descriptive analysis of self-reported project management information meaning that the findings should be treated with some caution. Robust empirical evidence on the impact of city deals on quantifiable measures of local economic performance, would therefore cast extremely valuable light on the relative merits of city deals and place-based growth agreements, as well as the effectiveness of a contractual approach to central-government relations – something that policy-makers in the UK have assumed will result in better outcomes (Sandford 2017).

In this study, we estimate the impact of the first two waves of the UK's city deals scheme on economic performance by analysing the rates of economic growth, productivity and employment across 126 local governments in England between 2010 and 2019. To do so, we employ a Difference-in-Differences (DiD) approach to estimate the average effect of the city deals on local economic performance, before applying Callaway and Sant'Anna's (2021)

DiD with Multiple Time Periods (MTP) approach to estimate the potentially divergent effects of each wave of the city deals.

Our DiD estimates suggest that city deals were associated with improved economic growth, productivity and job creation in those urban areas benefitting from the additional resources allocated to them. However, the DiD with MTP estimates reveal that these benefits are present only for the first wave of the city deals. The positive effects that we identify for the first wave of city deals are substantively important and are resistant to a number of robustness checks, leading us to consider the institutional capabilities inherent in the different governance models present within each city-region. In particular, we reflect on whether the presence of an established growth regime amongst the city-regions participating in the first wave of city deals may explain the improvements in economic performance that we observe. Our multiple-period DiD estimates of the impact of city deals on local economic performance therefore have the potential to contribute to debates about the effectiveness of place-based growth strategies and urban governance more generally.

In the following section, we discuss place-based growth strategies and then describe the background to the city deals scheme. The subsequent section explains the empirical strategy that we employ, including information on the data, methods and estimators that comprise our research design. Thereafter, we present the results of the analyses that we undertake, before concluding with a discussion of the implications of the study.

Place-based Local Growth Strategies

Drawing on endogenous growth theory and ideas from new institutional economics, many researchers have called into question one-size-fits-all ‘place-neutral’ development policies intended to encourage the mobility of productive factors within a national economy, especially through infrastructure development (Barca, McCann, and Rodríguez-Pose 2012;

Garretsen et al. 2013). Instead, proponents of institutionalist approaches to development have emphasised the need to develop context-sensitive integrated development policies for enhancing the unique combination of factors within each region, especially in those more peripheral regions that have previously been unable to realise their potential for economic growth (see Iammarino, Rodriguez-Pose, and Storper 2019; OECD 2009; Pike et al. 2006). Critically, for these scholars, the institutional capabilities within any given region play a major role in shaping economic outcomes (Martin and Sunley 2006; Storper 1997). Such capabilities are more likely to be present where an established urban regime – the "informal arrangements by which public bodies and private interests function together in order to be able to make and carry out governing decisions" (Stone 1989, p.6) – shapes economic governance in the area (Mosberger and Stoker 2001; Pierre 1999).

From a theoretical point of view, place-neutral development policies are generally envisaged as improving economic performance by generating agglomeration economies (and equality of opportunity for individuals) through the concentration of economic activity in faster-growing urban areas and by creating strong infrastructure connections linking those areas to the rest of the country (Gill 2010; World Bank 2009). However, this approach to economic development has long been criticised for ignoring the negative spatial effects of supposedly place-neutral policies, especially the way in which additional investments in already successful regions can further exacerbate inter-regional inequalities (Martin 1993). By contrast, targeted place-based policies are regarded as a potential means for generating productivity gains and higher economic growth in laggard city-regions (Martin et al. 2018) that can also enable the national economy to reach its output frontier (Garcilazo, Martins, and Tompson 2010).

A key implication of the emphasis on harnessing the unique assets of individual regions to achieve superior economic performance is the need to move away from top-down,

centrally-led programmes of development. Rather, place-based policies require the development of partnerships between state and non-state actors within and across different levels of governance to build the institutional capabilities needed to identify and share relevant local knowledge (Bentley, Pugalis, and Shutt 2017; Clarke 2017). For place-based growth strategies, this involves encouraging local state actors to be willing to interact and work each other and with policy-makers in higher levels of government, which may mean that 'exogenous policy action' is essential to "trigger" endogenous institutional changes. For such a partnership approach to place development to work, a delicate balance between exogenous and endogenous action is therefore required – local actors should 'set targets and design projects, while the external "development agency" sets the general conditions that the former must follow and tailor to specific places' (Barca, McCann, and Rodríguez-Pose 2012, p.139).

Regime theory can provide valuable insights into the ways in which local actors might develop partnerships at multiple levels in pursuit of economic development. In the past, the theory was considered by some observers to be inapplicable to the UK because of its undue emphasis on business actors within urban governance (Davies, 2004). However, others have argued that regime theory permits a less state-centric interpretation of urban policy and allows for variation in the types of regimes that might be present within different governmental systems (Harding 1996). Indeed, from a regime theory perspective, an approach to local economic governance that blends national and local priorities may be especially apt in an UK setting, because urban growth regimes in the country generally bear a "stronger imprint of national business and government forces" than in many other more decentralized countries, such as the US (Harding 1994).

According to Rodríguez-Pose and Wilkie (2017) there are three key reasons for anticipating that the design and administration of economic development activity at the local

level may be more effective than central control and imposition of development policies. First, local policy-makers are best-placed to identify the distinctive economic competences within an area, and the support required to harness those competences to compete in the global economy. Second, local policy-makers are embedded in the institutions and social networks present within an area, which enables them to understand local needs and priorities. The impact of this connection with a place means that local actors are more likely to be committed to policies that contribute towards sustainable and inclusive economic growth. Third, because a place-based approach can be applied to areas of any type or size or level of economic development, activities to support development can be designed around the limitations and opportunities presented by heterogeneous local institutional and economic endowments. Nevertheless, given the importance of local knowledge and connections, place-based approaches to development generally emphasise the need for strong institutional capabilities to make a success of development policy (Rodríguez-Pose and Wilkie 2017).

The growing empirical literature on place-based development as an approach to improving economic performance offers somewhat mixed evidence of its efficacy (Grover, Lall and Maloney 2022). Several cross-country studies using Regression Discontinuity Design (RDD) methods point towards the effectiveness of EU regional policy as a vehicle for improving economic growth (e.g. Becker et al. 2018; Gagliardi and Percoco 2017; Pelligrini et al. 2013), though similar benefits for employment may not have been achieved (Becker, Egger, and von Ehrlich 2010). A synthetic control method-based analysis of 23 EU regions exiting convergence status suggests that the benefits of place-based subsidies for GDP per capita and employment can persist after they have been reduced, provided wider economic conditions remain stable (Cerqua and Pelligrini forthcoming). However, a fixed effects and RDD analysis of the regional distribution of EU transfers suggests that a place-neutral

approach to development could potentially have resulted in greater welfare gains than a place-based approach (Blouri and Ehrlich 2020).

Within-country studies across Western Europe also reveal a complex pattern of relationships between place-based policies and economic performance. A RDD analysis of place-based investment in Germany finds improvements in local economic growth, but no effects on employment (Brachert, Dettmann, and Titze 2019). An investigation of a similar programme in the UK using an instrumental variable approach finds a positive effect on employment but no productivity gains (Criscuolo et al. 2019), whereas RDD analysis of a support programme for businesses in the most deprived areas of England identified no gains in employment (Einiö and Overman 2020). Research in Italy employing RDD and dose response approaches, respectively, has also identified employment gains from place-based assistance at the municipal level, though has yet to assess wider gains in economic growth and productivity (Cerqua and Pelligrini 2022; Cusimano, Mazzola, and Barde 2021). An RDD-based evaluation of place-based industrial subsidies in Germany finds evidence of positive persistent effects on multiple measures of economic activity, such as income, local taxbase and land prices (Ehrlich and Seidel 2018). By contrast, DiD estimates of the effects of an enterprise zone programme in France indicate that the positive effects of such zones on rates of employment are not sustained when the programme closes (Givord, Quantin and Trevien 2018).

Outside of Europe, a review of the voluminous US econometric literature analysing the impact of enterprise zones as a place-based policy suggests that job growth is rarely achieved (see Neumark and Simpson 2015 for a review). A conclusion that has been confirmed in subsequent studies using RDD and DiD approaches (e.g. Gurmu, Sjoquist and Wheeler 2021; Neumark and Young 2021). By contrast, DiD analysis of the impact of a job-creation scheme in disadvantaged municipalities in Japan points towards gains in

employment in multiple sectors of the economy, especially in agriculture and service-based industries (Kazekami 2017). Research utilizing panel-based and RDD approaches in India suggests that tax-exemption and incentive programmes for underdeveloped districts are associated with job creation, at least in the short-run (Chaurey 2017; Hasan, Jiang and Rafols 2021; Shenoy 2018). In China, research on special economic zones in China using a DiD approach points to benefits in terms of output, productivity, investment, and employment (Lu, Wang, and Zhu 2019). However, RDD analysis of the Great Western Development Programme in China, a targeted investment scheme, finds that aside from GDP growth, few economic benefits have been realised (Jia et al. 2020). Moreover, RDD analysis of the long-standing National Poor County programme in China attributes an absence of growth in treated areas to the effects of local state capture (Liu and Ma 2019).

The above research effort indicates that the use of city deals to encourage place-based local development may have a positive impact on economic performance in Western Europe countries, though it may be difficult to predict in advance whether this will be consistent across different economic indicators. Although the place-based investments in the UK during the 2010s did not compensate for the austerity cuts imposed during the period (O'Brien and Pike 2019), surprisingly little systematic empirical research has sought to assess the impact of city deal initiatives on economic outcomes. Rigorous analysis of the economic effects of the British City Deals scheme can therefore cast valuable additional new light on the effectiveness of different approaches to place-based development. Critically, due to the staggered adoption of the city deals in England, it is also possible to demonstrate the wider applicability of Callaway and Sant'Anna's (2021) DiD with Multiple Time Periods (MTPs) approach, which can approximate heterogeneous treatment effects for policies implemented across more than one point in time.

City Deals in England

The City Deals scheme emerged as part of the UK government's Core Cities Amendment in the Localism Act of 2011, which "offered local councils the opportunity to submit plans on how they planned to promote local economic growth" (Ward 2023, p.6). The principal policy rationale behind this shift to dealmaking was a desire to devolve power to local actors in order to incentivise local growth strategies and to reduce the UK's structural budget deficit (O'Brien and Pike, 2015). Urban governments obtaining approval for the plans they submitted to central government were invited to negotiate with central government and agree 'tailored city deals' offering them increased autonomy over financial matters relating to economic development, especially through access to new sources of public and private capital funding and investment. The overarching aim of the scheme was thus to enable "civic and private sector leaders to influence the key decisions that affect their economic competitiveness; and/or innovative projects to unlock growth in each area" (Cabinet Office 2011, 6).

The eight so-called core cities in England (Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield) were earmarked by UK central government as candidates for the first wave of city deals. In 1995, these cities began to work together to advocate for devolution of greater freedom over economic policy as a bottom-up attempt to counter the restrictive effects of centralisation (Parkinson et al. 2004). In recognition of the appetite for devolution in core cities, the first wave of city deals were designed with the objective of supporting them to achieve economic growth comparable with their counterparts in France, Germany and Italy. To do so, it was recognised that to "compete in an increasingly competitive global market, the core cities must look beyond their boundaries and work with their neighbours" (Cabinet Office 2011, 12). To reassure central government of the potential for effective collaboration between local state actors, those actors

were expected to commit to governance and accountability mechanisms that could "build partnerships across the public and private sectors… to maximise economic gains across the wider economic area" (Cabinet Office 2011, p.16) of which they are part i.e. the city-region. The accountable bodies for each city-region would then also be responsible for negotiating that area's deal with central government, co-ordinating region-wide activities and disbursing any government monies that they received.

Most of the core city-regions (Leeds, Liverpool, Manchester, Newcastle and Sheffield) set up Combined Authorities, supralocal governments (Pill and Gurran forthcoming) that are legally-recognised statutory bodies responsible for exercising metropolitan and local economic development and transport infrastructure functions, to serve as the main governance mechanism for administering their city deal. These institutions give groupings of local governments within a city-region the "legal authority to make collective decisions" (Pill and Gurran, p.7) and establish structures of political oversight and accountability at that level. As such, they seem likely to magnify the impact of the broader institutional capabilities that can be brought to bear on economic development within a city-region. In the second wave of City Deals, joint committees set up and run collaboratively by the local governments within the city-region were especially popular. Such committees are bodies established by one or more local governments to advise on the discharge of specific functions, such as economic development and planning, with decision-making still exercised by individual local governments themselves. In addition, economic boards, public-private advisory bodies composed of representatives from local governments and local businesses who offer guidance to constituent local governments on how to manage economic development were common (O'Brien and Pike 2015). City-regions that have joint committees or economic boards co-ordinating their economic development activities may lack the authority to unleash all the institutional capabilities extant within the area.

As a place-based growth strategy, the city deals scheme was intended to pump-prime a wide range of targeted economic development activities, especially through: tax innovations (e.g. earn backs, tax increment financing, pooled investment funds); support for the city skills system (e.g. apprenticeship hubs, skills banks and skills budgets); business enterprise support (e.g. venture capital funds, business growth hubs, one-stop shops); and, infrastructure redevelopment and upgrades (e.g. rail service commissioning, localised asset management, energy efficiency programmes) (Cabinet Office 2012). The combination of activities supported in different areas varied across each city-region depending on the bespoke requirements for each area that were identified during the process of deal-making. For example, Greater Birmingham's wave 1 city deal emphasised its unique potential as a life sciences accelerator, while Greater Manchester's deal stressed its emerging global inward investment capabilities, and Newcastle's deal its status as a centre of excellence for marine and offshore manufacturing. Although the wave 2 city deals comprised more generic schemes for supporting economic development than the wave 1 deals, some attention was still paid to tailoring initiatives to the distinctive attributes of each city region. For instance, high tech innovation in Greater Cambridge and Oxford/Oxfordshire, the marine and maritime sector in Southampton and Portsmouth, and automotive manufacturing in Sunderland and South Tyne (https://www.gov.uk/government/collections/city-deals).

Although UK central government has attempted to apply a 'what works' approach to much subnational policy-making (Cabinet Office, 2014), there has been some concern about the government's commitment to evaluating the impacts of the city deals scheme (National Audit Office 2015). A preliminary evaluation report of the first wave of the UK city deals suggested that it may have been effective in spurring local state actors to move forward with infrastructure investments (see, National Audit Office 2015). Similarly, case study and anecdotal evidence from Australia, Canada, France and the US points towards the potential

benefits of city deals for bringing local state actors together, but highlights that effective governance mechanisms may hold the key to long-term sustainability (Pill et al. 2020). In England, local authorities have not always voted in favour of the proposals that have been agreed by city deal boards (Deas, 2014). However, the evidence base on the economic impact of city deals in the UK (and elsewhere) remains piecemeal, is based on self-reported data and does not come from empirical studies utilising appropriate econometric estimation strategies. Our analysis is thus intended to contribute to debates about 'what works' in urban governance by using a DiD MTP approach to analyse economic performance in local governments participating in the first two waves of City Deals in England. In doing so, we hope to furnish robust evidence on the impact of this increasingly important place-based growth policy and to underline the value of analysing policy implementation across multiple time periods.

Data and Methods

To estimate the potential effect of the City Deals agreements on local economic performance, we collected data from the full population of 126 English single-tier local governments: 58 Unitary Authorities, 32 London Boroughs and 36 Metropolitan Districts, for the period 2010–2019. These local governments are expected to collaborate with each other to promote economic development within the broader functional economic geography, or city-region, within which they are located. Sixty-five governments were located within a city-region covered by a City Deal agreement at some point during the study period.

To better understand the impact of city deals on economic performance across England, we analyse the first two waves of the City Deals. The first wave of City Deals, agreed in late 2012, included those local governments pertaining to the following city-regions: Leeds City Region, Greater Manchester, Greater Birmingham and Solihull, Sheffield

City Region, Liverpool City Region, Bristol and West of England, Newcastle and Gateshead, and Nottingham. The second wave of City Deals were agreed by the end of March, 2014, and included the local governments from the following city-regions: Plymouth and South West, Southampton and Portsmouth; Preston, South Ribble and Lancashire, Black Country, Stoke and Staffordshire, Leicester and Leicestershire, Hull and Humber, Coventry and Warwickshire, Thames Valley Berkshire, Swindon and Wiltshire, Greater Brighton, Tees Valley, Oxford and Central Oxfordshire, Sunderland and South Tyneside, Greater Norwich, Greater Ipswich, Greater Cambridge and Southend.

We are confident that our estimates of the impact of city deals can approximate effects specific to that scheme, rather than other deals that were struck between central and local government for the following reasons; first, the growth deals scheme was implemented in nearly all English city-regions in the period after the city deals, hence any potential effects of the growth deals in terms of employment and growth are assumed to be a "common shock" affecting both the treated and control group in our Difference-in-Differences approach. Second, although transportation issues were covered in many city deals, subsequent schemes, such as the devolution deals, were largely focused more narrowly on such issues, rather than the broader range of economic development activities that were the focus of both waves of city deals (Westwood, Sensier, and Pike 2021).

The analysis presented here focuses first on publicly available measures of local economic growth and productivity that were collected as part of the regional economic activity by gross domestic product release, published on 26 May 2021, by the UK's Office for National Statistics. Specifically, the growth rates for Gross Domestic Product (GDP) and Gross Value Added (GVA), both indicators measured in real terms. Furthermore, we estimate a third model to assess the impact of the City deals on job creation, using as a dependent variable the rate of growth in job density, i.e. the number of jobs per resident aged 16-64,

retrieved from the Official Census and Labour Market Statistics provided by the UK's Office for National Statistics. These indicators are particularly appropriate for our analysis because they reflect key City Deals' priorities regarding output, productivity growth and employment (O'Brien and Pike 2015).

Empirical Specification

To study the overall effect of signing a city deal on economic performance, we conduct difference-in-differences (DID) analyses comparing the outcome trends of local governments covered by a deal to the trends of those not participating in the program. The traditional generalized DID set up to do so would be as follows:

$$Log(y_{it}) = \alpha_i + \delta_t + \beta D_{it} + \varepsilon_{it} \quad (1)$$

where y_{it} represents each of our outcomes of interest, i.e., real GDP growth, real GVA growth and job density growth for year t (t = 2010, …, 2019) in local government i (i = 1, …, 126), α_i denotes local government fixed effects, and δ_t represents time (yearly) effects. D_{it} is a binary indicator equal to one for those areas being treated after year 2012 (first wave of City Deals), or after year 2014 (second wave), and zero otherwise. In mathematical notation, D_{it} = ($treated_i$ * d_t), where $treated_i$ is a dummy variable coded one for local governments participating in a deal, and zero otherwise, and d_t is a time dummy that switches on for post 2012 observations in local governments pertaining to the first wave of city deals, and switches on for post 2014 observations in local governments pertaining to the second wave.

Hence, we estimate a DID specification with staggered adoption, that is once a local government is treated, it remains treated during the following years, and variation in treatment timing. The methodological literature on DID approaches has shown recently that

traditional approaches to estimating DID specifications, such as the Two-Way Fixed-Effects (TWFE) estimator, may produce biased estimates of causal effects when there is staggered adoption and/or variation in treatment timing (see, e.g. Goodman-Bacon 2021; Callaway and Sant'Anna 2021; Athey and Imbens 2022, among others). To address this potential source of bias, we use the DID with multiple periods estimator proposed by Callaway and Sant'Anna (2021).

The basic idea behind Callaway and Sant'Anna's (2021) approach consists of estimating a "group-time average treatment effect", using a 2x2 DID estimate for each group of units that receive the treatment at the same time, by comparing the change in outcomes of these units to units either "never treated" or "not-yet-treated". These group-specific DID estimates are then averaged to get the treatment effects. Furthermore, this empirical approach allows us to estimate the dynamic longitudinal effects of the city deals for each group or wave (see Callaway and Sant'Anna 2021, for a detailed explanation of this methodology).

Results

Table 1 reports summary statistics for our sample of English local governments. The governments that participated in City Deal agreements had, on average, lower real GDP, real GVA, and jobs density growth rates in comparison to those local governments that were not part of the program. These differences in outcomes could be important if they create non-parallel outcome dynamics between the treated and untreated groups, in which case a DID approach would not be feasible to recover the causal parameter of interest (see, e.g., Abadie 2005). To evaluate the potential for this issue to influence our analysis, we perform the Callaway and Sant'Anna (2021) procedure tests for pre-trends, finding that we cannot reject the null hypothesis that there is no pre-trend for all cases at a 5% significance level (see Table 2). It should be noted that all Average Treatment Effects (ATTs) were estimated under the

assumption of unconditional parallel trends. Nonetheless, given that the first two waves of City Deals covered the largest English cities outside London, we also estimate all ATTs under the weaker assumption that parallel trends hold conditionally after controlling for the population of each local government. These results, reported in Appendix A, Table A1, and Figures A1-A3, are virtually identical to our baseline estimates.

[Table 1 here]

We begin our analysis by estimating the effect of the City Deal agreements on real local GDP growth. Table 2, Panel I, reports two set of estimates, (i) a single average treatment effect for all treated units, which can be interpreted as the standard average treatment effect on the treated (ATT) in the canonical DiD setup, and (ii) an average treatment effect by City Deals wave, that is, the two groups of local governments that participated in City Deal agreements in wave 1 and wave 2, respectively. We report in Table 2 estimates using the never-treated local governments as the control group (column (a)) and, as a robustness test, we also provide results using the not-yet-treated local governments as the comparison group (column (b)). Inferences are made using robust standard errors clustered at the local government level.

The single-ATT for all treated units suggests that, overall, the City Deals agreements were successful in boosting local economic growth in those city-regions signing agreements. More specifically, the estimated single-ATT is associated with an increase in real GDP growth of about 1.4 percentage points (95% CI [0.54; 2.26]), when using the never-treated local governments as control group, and a similar increase of about 1.4 percentage points (95% CI [0.53; 2.27], when using the not-yet-treated local governments as control group.

Turning now to the estimation of the group-ATTs, our findings suggest that while City Deal agreements were beneficial for those local governments participating in the first wave (labelled in Table 2 as "Group 2013"), the estimates for the second wave ("Group 2015" in Table 2) prevent us from clearly concluding that City Deals boosted GDP growth in these local governments. Specifically, the "Group 2013" point estimate is associated with an increase in real local GDP growth of about 1.5 percentage points. Regarding the second wave of City Deals, the "Group 2015" point estimates are also positive (1.26) but the magnitude of the standard errors reported in Table 2 suggest that these point estimates are not statistically significant.

Turning now to our second outcome of interest, i.e. real local GVA growth, our estimates point in the same direction as in the case of real GDP growth. Overall, it seems that City Deals were successful in boosting real GVA growth figures, with the single-ATT point estimates being positive (about 1.6 percentage points) and statistically significant (95%CI [0.630;2.549]). Nonetheless, the group-ATTs also reveal that the City Deals effect was uneven depending on the implementation wave. Again, our estimates suggest that local governments participating in the first wave of City Deals (Group 2013) clearly benefited from these agreements, in terms of real GVA increase, point estimates suggesting an increase of real GVA figures by about 1.5 percentage points. On the other hand, although point estimates for the group of local governments participating in the second wave (Group 2015) are again positive (1.16), the magnitude of the standard errors prevent us from concluding that the City Deals effect is statistically significant in this case.

Finally, our results suggest that City Deals also had a positive impact in boosting job creation (Table 2, Panel III). The single-ATT for all treated units suggests that these deals resulted in an increase of jobs density of about 1.22 percentage points ((95%CI [0.18;2.28]). Again though, we observe different results between groups, with the positive effect only

statistically significant for the first wave of City Deals (Group 2013: point estimate 1.986. 95%CI[0.734,3.240]).

In Table 2, we also report estimates of the single-ATTs using alternative estimators to offer a benchmark to check the robustness of the results to different estimation techniques. Specifically, we report single-ATTs for each outcome of interest obtained through a traditional TWFE DID approach, and also through a recently developed alternative to DID designs with staggered adoption introduced in Borusyak et al. (2021), known as the DiD imputation estimator (see, Borusyak et al. 2021, for a detailed explanation of this methodology). The results of both approaches, i.e., the TWFE and Borusyak et al. (2021) imputation estimator, confirm our previous findings, though the estimated single-ATT coefficients are somewhat smaller.

[Table 2 here]

The next set of results estimate the group-time average treatment effects for each outcome under analysis. Starting with our first outcome of interest, i.e. real GDP growth, Figure 1, panel (a), reports the group-time treatment effects along with 95% confidence intervals, under the unconditional parallel trend assumption, while Figure 1, panel (b) report the same estimates assuming conditional parallel trends. The plots show pre-treatment estimates that can be used to test the parallel trends assumption, and also the treatment effect estimates in post-treatment periods.

First, pre-treatment estimates suggest that the parallel trends assumption holds in all cases, since there do not seem to be statistically significant differences between the real GDP growth of the treated and control groups. Second, the group-time average treatment effect estimates confirm our previous finding that City Deal agreements had a beneficial effect for those local governments signing City Deal agreements in the first wave. The findings for the

2013 Group suggest that the positive impact of City Deals is most likely to be observed once the activities supported by the scheme have bedded in. Our estimates suggest that real GDP growth for this group increased substantially two years after the policy implementation, with the positive effect peaking four years after, where the estimated impact is about a 2.7 percentage points improvement. Regarding the dynamic impact of the City Deals for the second wave (Group 2015 in Figure 1), our results suggest also that there might be a positive effect in boosting local GDP growth, though the impact seems to be statistically significant only four years after the implementation, which, along with the aggregated group ATTs discussed above, calls for some caution when claiming any positive effects for the second wave of City Deals.

[Figure 1 here]

The results of the group-time average treatment effects for our second outcome of interest, i.e. real GVA growth are very similar to the ones discussed above (see Figure 2). First, the parallel trends assumption seems to hold in all cases. Second, there seems to be a positive impact for the first wave of City Deals, starting two years after the implementation and reaching its peak about four years after, where the estimated impact is about a 3.2 percentage points improvement. On the other hand, there is no clear effect of City Deals for those local governments participating in the second wave, with the post-treatment estimates not statistically significant in any year.

[Figure 2 here]

Finally, we report in Figure 3 the results of the group-time average treatment effects for our third outcome of interest, i.e. job density growth. The results suggest that there is a positive impact of the program for those local governments participating in the first wave, this positive effect being evident one year after the implementation and reaching its peak about five years after, where the estimated impact is about a 3.2 percentage points improvement. On the other hand, there is no clear effect again of City Deals for those local governments participating in the second wave, with the post-treatment estimates not statistically significant in any year. It should be noted that in the latter case, i.e. the 2015 Group, the pre-treatment point estimates suggest that the parallel trends assumption may be violated, hence Group 2015 results should be interpreted with caution for this outcome.

[Figure 3 here]

Conclusion

In carrying out this study, we anticipated that economic performance would improve in those local governments of England participating in the City Deals schemes established by the UK government. Using a DiD with MTP approach, the results from our study indicate that rates of economic growth, productivity and employment all increased in the wake of city deal funding. In this respect, our findings are similar to those from several other studies of place-based development policies in Western Europe (e.g. Becker et al. 2018; Cerqua and Pelligrini 2022; Ehrlich and Seidel 2018), if not to results from equivalent research in the US (Neumark and Simpson 2015). Importantly, though, MTP analysis indicates that the positive effects of participation in a City Deals scheme seem to apply only for those areas involved in the first wave of the scheme, which witnessed a statistically significant improvement in economic performance of around 2.5 to 3%. This is a sizeable boost to the economy in urban areas that

points towards the potential value of the institutional capabilities in those areas that participated in the first wave of the City Deals scheme.

Local governments within the city-regions that were included in the first wave of city deals seem likely to have benefitted from the longer history of collaboration and partnership-working in those areas. Not only did the eight city-regions that participated in wave one organize themselves as core cities in England from the 1990s onwards, they were recognised to be key actors by UK central government (Parkinson et al. 2004) and accorded influence over the development of the city deals programme itself (O'Brien and Pike, 2015). In addition, most were coterminous with the former metropolitan county boroughs found in the North of England. These areas are served by local governments with responsibility for regionwide waste management and public transport. They have also been the focus for on-going strategic collaboration efforts between local governments and nonstate actors (Rees and Lord 2013). In particular, the city regions participating in the first wave of city deals have well-established growth regimes co-ordinating the activities of a multitude of key actors through various forms of collaboration (e.g. DiGaetano and Klemanski 1993; Harding, Harloe and Rees 2011; John and Cole 1998; Ziafati 2018).

The adoption of the combined authority governance model by the majority of the city-regions participating in the first wave of city deals arguably represented a natural evolution from the existing formal and informal institutions for local economic governance. By contrast, the city-regions participating in the second wave of city deals were not marked with an equivalent institutional genealogy to those participating in the first wave, often originating in partnerships set up solely for the purpose of striking a city deal with central government. Such "instrumental deal chasing" to stave off the damaging effects of budget cuts is prone to generating poor results (Lowndes and Gardner 2016, 365). Differences in institutional inheritance therefore seem likely to have important implications for the success of place-

based growth policies, especially for the effectiveness of city deals that are reliant on negotiated agreements between central and local actors. At the same time, our results could perhaps be explained by variations in investment across the two waves of city deals, which is, unfortunately, difficult to analyse in detail due to a lack of transparency around the funding allocations and wider financial data availability constraints. It is also important to note that a longer history of support from other important sources of local regeneration funding, including from the EU, may also have played a role in enabling the larger city-regions participating in the first wave of city deals to improve economic performance.

Although some accounts have detailed the merits of city deals themselves for bringing key stakeholders together to work towards better economic and social outcomes (Pill et al. 2020), few studies provide robust analysis that demonstrate subsequent improvements in economic performance. Indeed, the sparse research on the efficacy of City Deals is somewhat equivocal about their impact on economic performance (National Audit Office 2015) – as too is empirical evidence on the effectiveness of place-based growth strategies more generally (see above). Our study indicates that local economies can benefit from the devolution of additional public funds from central government to local state actors, but that this beneficial effect seems only to be apparent in city-regions that have well-established growth regimes. One important implication of this might therefore be that areas lacking proven institutional capabilities for building and maintaining multi-actor agreement require additional resources and support up-front to develop and enhance those capabilities prior to the disbursement of government funds. It may also be the case that local state actors seeking to negotiate City Deals should consider adopting, or be encouraged to adopt, the governance model typical of those city-regions in England involved in the first wave of City Deals. To cast more light on the impact of alternative governance structures on the success of the city deals scheme, it would be especially valuable to investigate the relative degree of conflict between local

actors in different city-regions and how this may have hindered or helped multi-actor co-operation.

Our research design focused only on the time period from which the City Deals were agreed, giving us some confidence that we are able to isolate any changes in economic performance that can plausibly be associated with the City Deals scheme. Nevertheless, despite the strengths of the empirical strategy that we employ, there are aspects of the City Deals that we have not been able to fully incorporate within our research design. Firstly, as for evaluations of other place-based growth strategies, it is not possible to accurately identify all the additional activities that were undertaken by local governments receiving City Deal funds. Some examples of such actions are reported in the evaluation of the first wave of City Deals published by the National Audit Office, but systematic quantitative information on how resources from individual deals were allocated to specific initiatives is needed to facilitate an in-depth understanding of the most (and least) effective interventions employed by the city-regions receiving additional funding. Secondly, debates continue about the merits of GVA figures as indicators of economic productivity. Whether the activities supported by the first wave of City Deals were associated with a complementary increase in alternative measures of productivity, such as unit labour and unit wage costs, is something that could usefully be explored through in-depth case studies. Thirdly, the impact of the City Deals on the growth rates in more and less deprived neighbourhoods within the urban areas receiving funding is something that would cast further valuable light on the nature of the evidence that we present, and the extent to which place-based versus place-neutral approaches to territorial inequality may work best.

In summary, this study suggests that it may be possible to achieve desired economic outcomes through place-based strategies that provide local state actors with the resources needed to develop and implement additional economic development activities, especially

where those actors can draw upon well-established institutional capabilities. Further research addressing the relative importance of the actual investments made versus the benefits accruing from stronger city-region institutions would prove informative. As would investigation of the path dependency in the relationships between local actors in those city-regions with more or less developed institutional capabilities. Detailed analysis is also required to identify the precise interventions through which different city-regions support improved economic performance. Nevertheless, our study indicates that the funding provided through the first wave of City Deals in England appears to have enabled local governments to implement impactful interventions – an insight that could inform urban and regional policy in other countries. In particular, the finding that local governments in city-regions with well-established growth regimes can benefit most from place-based growth policies may be a finding that is readily generalizeable to other contexts than the UK. Furthermore, our findings indicate that multiple period DiD approaches represent an especially valuable means for explaining the potentially varying impacts associated with staggered policy adoption. Urban policy researchers seeking to identify heterogeneous treatment effects from national and/or local policy changes could usefully apply similar estimation strategies.

References

Abadie, Alberto. 2005. “Semiparametric Difference-in-Differences Estimators.” *The Review of Economic Studies* 72 (1): 1-19.

Aghion, Philippe, Howitt, Peter, Howitt, Peter W., Brant-Collett, Maxime, García-Peñalosa, Cecilia. 1998. *Endogenous growth theory*. Cambridge, MA: MIT press.

Athey, Susan, Imbens, Guido W. 2022. “Design-based Analysis in Difference-in-Differences Settings with Staggered Adoption.” *Journal of Econometrics* 226 (1): 62-79.

Barca, Fabrizo, McCann, Philip, Rodríguez-Pose, Andres. 2012. "The Case for Regional Development Intervention: Place-based Versus Place-neutral Approaches." *Journal of Regional Science* 52 (1): 134-152.

Bartik, Timothy J. 2020. "Using Place-based Jobs Policies to help Distressed Communities." *Journal of Economic Perspectives* 34 (3): 99-127.

Becker, Sascha O., Egger, Peter H., Von Ehrlich, Maximillian. 2010. "Going NUTS: The Effect of EU Structural Funds on Regional Performance." *Journal of Public Economics* 94 (9-10): 578-590.

Becker, Sascha O., Egger, Peter H., Von Ehrlich, Maximiliian. 2018. "Effects of EU Regional Policy: 1989-2013." *Regional Science and Urban Economics* 69: 143-152.

Bentley, Gill, Pugalis, Lee, Shutt, John. 2017. "Leadership and Systems of Governance: The Constraints on the Scope for Leadership of Place-based Development in Sub-national Territories." *Regional Studies* 51 (2): 194-209.

Blouri, Yashar, Ehrlich, Maximillian V. 2020. "On the Optimal Design of Place-based Policies: A Structural Evaluation of EU Regional Transfers." *Journal of International Economics* 125: 103319.

Borusyak, Kirill, Jaravel, Xavier, Spiess, Jann. 2021. "Revisiting Event Study Designs: Robust and Efficient Estimation." *arXiv preprint arXiv:2108.12419*.

Brachert, Matthias, Dettmann, Eva, Titze, Mirko. 2019 "The Regional Effects of a Place-based Policy – Causal Evidence from Germany." *Regional Science and Urban Economics* 79: 103483.

Brazil, Noli, Portier, Amanda. 2022. "Investing in Gentrification: The Eligibility of Gentrifying Neighborhoods for Federal Place-based Economic Investment in US Cities." *Urban Affairs Review* 58 (5): 1234-76.

Cabinet Office. 2011. *Unlocking growth in cities* London: The Cabinet Office.

Cabinet Office. 2012. *Unlocking growth in cities: City deals – wave 1*. London: The Cabinet Office.

Cabinet Office. 2014. *What Works? Evidence for Decision Makers*. London: The Cabinet Office.

Callaway, Brantly, Sant'Anna, Pedro H. 2021. "Difference-in-differences with Multiple Time Periods." *Journal of Econometrics* 225 (2): 200-230.

Cerqua, Augusto, Pellegrini, Guido. 2022. "How much does State Aid Mitigate Employment Losses? Local Policy Effects at a Time of Economic Crisis." *Regional Studies*, 56 (10): 1698-1712.

Cerqua, Augusto, Pellegrini, Guido. 2022. "I Will Survive! The Impact of Place-based Policies when Public Transfers Fade Out." *Regional Studies*, pp.1-14.

Chaurey, Ritam. 2017. "Location-based Tax Incentives: Evidence from India." *Journal of Public Economics* 156: 101-120.

Clarke, Nick, Cochrane, Allen. 2013. "Geographies and Politics of Localism: The Localism of the United Kingdom's Coalition Government." *Political Geography* 34: 10–23.

Clarke, Susan E. 2017. "Local Place-based Collaborative Governance: Comparing State-centric and Society-centered models." *Urban Affairs Review* 53 (3): 578-602.

Criscuolo, Chiara, Martin, Ralf, Overman, Henry G., Van Reenen, John. 2019. "Some Causal Effects of an Industrial Policy." *American Economic Review* 109 (1): 48-85.

Cusimano, Alessandro, Mazzola, Fabio, Barde, Sylvain. 2021. "Place-based Policy in Southern Italy: Evidence from a Dose–response Approach." *Regional Studies* 55 (8): 1442-1458.

Davies, Jonathan S. 2003. "Partnerships Versus Regimes: Why Regime Theory Cannot Explain Urban Coalitions in the UK." *Journal of Urban Affairs* 25 (3): 253-70.

Davoudi, Simin, Madanipour, Ali (eds). 2015. *Reconsidering Localism*. London: Routledge.

Deas, Iain. 2014. “The Search for Territorial Fixes in Subnational Governance: City-regions and the Disputed Emergence of Post-political Consensus in Manchester, England. *Urban Studies* 51(11): 2285-2314.

DiGaetano, Alan, Klemanski, John S. 1993. “Urban Regimes in Comparative Perspective: The Politics of Urban Development in Britain.” *Urban Affairs Quarterly* 29(1): 54-83.

Duranton, Gilles, Venables, Anthony J. 2018. *Place-based policies for development* (No. w24562). National Bureau of Economic Research.

Ehrlich, Maximillian. V., Seidel, Tobias. 2018. “The Persistent Effects of Place-based Policy: Evidence from the West-German Zonenrandgebiet.” *American Economic Journal: Economic Policy* 10 (4): 344-74.

Einiö, Elias, Overman, Henry G. 2020. “The Effects of Supporting Local Business: Evidence from the UK.” *Regional Science and Urban Economics* 83: 103500.

Evers, David, Dignum, Marloes, Hamers, David. 2021. “Illuminating the Black Box of the Government to Governance Transformation Thesis: The Case of Dutch City Deals.” *International Journal of Public Administration* 44(15): 1355-1365.

Gagliardi, Luisa, Percoco, Marco. 2017. “The Impact of European Cohesion Policy in Urban and Rural Regions.” *Regional Studies* 51(6): 857-868.

Garcilazo, Jose E., Martins, Joaquim O., Tompson, William. 2010. *Why Policies May Need to be Place-based in Order to be People-centred*. Paris: OECD Regional Development Policy Division. Available at: http://www.voxeu.org/.

Garretsen, Harry, McCann, Philip, Martin, Ron, Tyler, Peter. 2013. “The Future of Regional Policy.” *Cambridge Journal of Regions, Economy and Society* 6 (2): 179-186.

Gill, Indermit. 2010. *Regional Development Policies: Place-based or People-centred?* Paris: OECD Regional Development Policy Division. Available at: http://www.voxeu.org/index.php?q=node/5644

Givord, Pauline, Quantin, Simon, Trevien, Corentin. 2018. “A Long-term Evaluation of the First Generation of French Urban Enterprise Zones.” *Journal of Urban Economics* 105: 149-161.

Goodman-Bacon, Andrew. 2021. “Difference-in-differences with Variation in Treatment Timing.” *Journal of Econometrics* 225 (2): 254-277.

Gurmu, Shiferaw, Sjoquist, David L., Wheeler, Laura. 2021. “The Effectiveness of Job Creation Tax Credits.” *Regional Science and Urban Economics* 90: 103721.

Harding, Alan. 1994. “Urban Regimes and Growth Machines Toward a Cross-national Research Agenda.” *Urban Affairs Quarterly* 29 (3): 356-382.

Harding, Alan. 1996. “Is there a ‘New Community Power’ and why should we need one?” *International Journal of Urban and Regional Research* 20 (4): 637-55.

Harding, Alan, Harloe, Michael, Rees, James. 2010. “Manchester's Bust Regime?” *International Journal of Urban and Regional Research* 34 (4): 981-991.

Hasan, Rana, Jiang, Yi, Rafols, Radine M. 2021. “Place-based Preferential Tax Policy and Industrial Development: Evidence from India’s Program on Industrially Backward Districts.” *Journal of Development Economics* 150: 102621.

Iammarino, Simona, Rodriguez-Pose, Andrew, Storper, Michael. 2019. “Regional Inequality in Europe: Evidence, Theory and Policy Implications.” *Journal of Economic Geography* 19 (2): 273-298.

Jia, Junxue, Ma, Guangrong, Qin, Cong, Wang, Liyan. 2020. “Place-based Policies, State-led Industrialisation, and Regional Development: Evidence from China's Great Western Development Programme.” *European Economic Review* 123: 103398.

John, Peter, Cole, Alistair. 1998. “Urban Regimes and Local Governance in Britain and France: Policy Adaption and Coordination in Leeds and Lille.” *Urban Affairs Review* 33 (3): 382-404.

Kazekami, Sachiko. 2017. “Evaluating Place-based Job Creation Programs in Japan.” *IZA Journal of Labor Policy* 6 (1): 1-27.

Landefeld, J. Steven, Seskin, Eugene P., Fraumeni, Barbara M. 2008. “Taking the Pulse of the Economy: Measuring GDP.” *Journal of Economic Perspectives* 22 (2): 193-216.

Liu, Chang, Ma, Guangrong. 2019. “Are Place-based Policies Always a Blessing? Evidence from China’s National Poor County Programme.” *Journal of Development Studies* 55 (7): 1603-1615.

Logan, John R., Whaley, Rachel B., Crowder, Kyle. 1997. “The Character and Consequences of Growth Regimes: An Assessment of 20 years of Research.” *Urban Affairs Review* 32 (5): 603-630.

Lowndes, Vivien, Gardner, Alison. 2016. “Local Governance under the Conservatives: Super-austerity, Devolution and the ‘Smarter State.” *Local Government Studies* 42(3): 357-75.

Lu, Yi, Wang, Jin, Zhu, Lianming. 2019. “Place-based Policies, Creation, and Agglomeration Economies: Evidence from China's Economic Zone Program.” *American Economic Journal: Economic Policy* 11 (3): 325-60.

Martin Ron. 1993. “Reviving the Economic Case for Regional Policy.” In: *Spatial policy in a divided nation* ed. Mark Hart and Richard Harrison, R., 270–90. London: Jessica Kingsley.

Martin, Ron, Pike, Andy, Tyler, Peter, Gardiner, Ben. 2016. “Spatially Rebalancing the UK Economy: Towards a New Policy Model?” *Regional Studies* 50 (2): 342-57.

Martin, Ron, Sunley, Peter. 2006. “Path Dependence and Regional Economic Evolution.” *Journal of Economic Geography* 6 (4): 395-437.

Martin, Ron, Sunley, Peter, Gardiner, Ben, Evenhuis, Emil, Tyler, Peter. 2018. “The City Dimension of the Productivity Growth Puzzle: The Relative Role of Structural Change and Within-sector Slowdown.” *Journal of Economic Geography* 18 (3): 539-70.

Mossberger, Karen, Stoker, Gerry. 2001. “The Evolution of Urban Regime Theory: The Challenge of Conceptualization.” *Urban Affairs Review* 36 (6): 810-835.

National Audit Office. 2015. *Devolving Responsibilities to Cities in England: Wave 1 City Deals*. Report by the Comptroller and Auditor General. London: National Audit Office.

Neumark, David, Simpson, Helen. 2015. “Place-based Policies.” In *Handbook of Regional and Urban Economics 5*, 1197-287. Elsevier.

Neumark, David, Young, Timothy. 2021. “Heterogeneous Effects of State Enterprise Zone Programs in the Shorter Run and Longer Run.” *Economic Development Quarterly* 35 (2): 91-107.

O'Brien, Peter, Pike, Andy. 2015. “City Deals, Decentralisation and the Governance of Local Infrastructure Funding and Financing in the UK.” *National Institute Economic Review* 233: R14-R26.

O’Brien, Peter, Pike, Andy. 2019. “‘Deal or no Deal?’ Governing Urban Infrastructure Funding and Financing in the UK City Deals.” *Urban Studies* 56 (7): 1448-76.

O’Mahony, Mary, Timmer, Marcel P. 2009. “Output, Input and Productivity Measures at the Industry Level: The EU KLEMS Database.” *The Economic Journal* 119 (538): F374-F403.

OECD. 2009. *Regions Matter: Economic Recovery, Innovation and Sustainable Growth*. Paris: Organisation for Economic Co-operation and Development.

OECD. 2014. *Job creation and local economic development*. Paris: OECD Publishing.

OECD. 2021a. *Going for growth 2021: Shaping a vibrant recovery*. Paris: OECD Publishing.

OECD. 2021b. *OECD Productivity statistics: Methodological notes*. Paris: OECD.

Parkinson, Michael, Clark, Greg, Hutchins, Mary, Simmie, James, Verdonk, Hans. 2004. *Competitive European Cities: Where do the Core Cities Stand?* London: Office of the Deputy Prime Minister.

Pellegrini, Guido, Terribile, Flavia, Tarola, Ornella, Muccigrosso, Teo, Busillo, Federica. 2013. "Measuring the Effects of European Regional Policy on Economic Growth: A Regression Discontinuity Approach." *Papers in Regional Science* 92 (1): 217-233.

Pierre, Jon. 1999. "Models of Urban Governance: The Institutional Dimension of Urban Politics." *Urban Affairs Review* 34 (3): 372-396.

Pike, Andy, Rodrıguez-Pose, Andres, Tomaney, John. 2006. *Local and Regional Development*. London: Routledge.

Pike, Andy., Kempton, Louise, Marlow, David, O'Brien, Peter, Tomaney, John. 2016. *Decentralisation: Issues, Principles and Practice*. Newcastle University: Centre for Urban and Regional Development Studies (CURDS).

Pill, Madeline, Gurran, Nicole, Gilbert, Catherine, Phibbs, Peter. 2020. *Strategic Planning, 'City Deals' and Affordable Housing*. Report for Australian Housing and Urban Research Institute. Melbourne, Australia.

Pill, Madeline, Gurran, Nicole. Forthcoming. "Australian Adaptation of UK Dealmaking: Towards State Rescaling?" *Local Government Studies*.

Ranis, Gustav, Stewart, Francis, Ramirez, Alejandro. 2000. "Economic Growth and Human Development." *World Development* 28 (2): 197-219.

Rees, James, Lord, Alex. 2013. "Making Space: Putting Politics Back Where it Belongs in the Construction of City Regions in the North of England." *Local Economy* 28 (7-8): 679-95.

Rodríguez-Pose, Andres, Wilkie, Callum. 2017. "Revamping Local and Regional Development through Place-based Strategies." *Cityscape* 19 (1): 151-70.

Roemer, Michael, Gugerty, Mary K. 1997. *Does Economic Growth Reduce Poverty?* Cambridge, MA: Harvard Institute for International Development.

Sandford, Mark. 2017. "Signing up to Devolution: The Prevalence of Contract over Governance in English Devolution Policy." *Regional & Federal Studies* 27 (1): 63-82.

Shenoy, Ajay. 2018. "Regional Development through Place-based Policies: Evidence from a Spatial Discontinuity." *Journal of Development Economics* 130: 173-189.

Soininvaara, Ilpo. Forthcoming. "The Political Geographies of Strategic Partnerships: City Deals and Non-deals." *Environment and Planning C: Politics and Space*, p.23996544211064743.

Stone, Clarence N. 1989. *Regime Politics: Governing Atlanta, 1946-1988*. University Press of Kansas.

Storper, Michael. 1997. *The Regional World: Territorial Development in a Global Economy*. New York: Guilford Press

Tait, Malcolm, Inch, Andy. 2016. "Putting Localism in Place: Conservative Images of the Good Community and the Contradictions of Planning Reform in England." *Planning Practice & Research* 31(2): 174-94.

Waite, David, Maclennan, Duncan, O'Sullivan, Tony. 2013. "Emerging City Policies: Devolution, Deals and Disorder." *Local Economy* 28 (7-8): 770-85.

Waite, David, Morgan, Kevin. 2019. "City Deals in the Polycentric State: The Spaces and Politics of Metrophilia in the UK." *European Urban and Regional Studies* 26 (4): 382-99.

Ward, Matthew. 2023. "City deals." *House of Commons Library Briefing Paper*, No. 7158.

Westwood, Andrew, Sensier, Marianne, Pike, Nicola. 2021. "Levelling Up, Local Growth and Productivity in England." *Productivity Insights Paper No, 5*. Manchester University. https://www.productivity.ac.uk/wp-content/uploads/2021/12/PIP005-Levelling-Up-FINAL-011221.pdf

World Bank. 2009. World Development Report 2009: Reshaping economic geography. Washington, D.C.: World Bank

Ziafati Bafarasat, Abbas. 2018. ““Theorizing” Regime Theory: A City-regional Perspective.” *Journal of Urban Affairs* 40 (3): 412-425.

Table 1. *Summary Statistics*

	All		Treated		Untreated	
	Mean	SD	Mean	SD	Mean	SD
Real GDP growth	2.002	2.831	1.654	2.643	2.373	2.975
Real GVA growth	1.744	3.018	1.391	2.868	2.119	3.128
Job density growth	1.235	3.663	1.042	3.369	1.441	3.945
Observations	1260		650		610	

Table 2. *City Deals Aggregated Treatment Effects Estimates*.

	Callaway and Sant'Anna (2021)		Two-way Fixed Effects	Borusyak et al. (2021)
		Panel I: Real GDP growth		
	(a)	(b)		
All treated	1.398	1.403	0.653	0.896
	(0.441)	(0.444)	(0.289)	(0.284)
By group:				
Group 2013	1.489	1.497		
	(0.591)	(0.571)		
Group 2015	1.258	1.258		
	(0.685)	(0.685)		
Pre-Trend test (p-value)	0.368	0.379		
		Panel II: Real GVA growth		
	(a)	(b)		
All treated	1.589	1.568	0.614	0.894
	(0.489)	(0.493)	(0.324)	(0.315)
By group:				
Group 2013	1.868	1.833		
	(0.644)	(0.622)		
Group 2015	1.162	1.162		
	(0.770)	(0.770)		
Pre-Trend test (p-value)	0.317	0.333		
		Panel III: Jobs density growth		
	(a)	(b)		
All treated	1.226	1.139	0.501	0.657
	(0.536)	(0.535)	(0.271)	(0.266)
By group:				
Group 2013	1.986	1.845		
	(0.639)	(0.611)		
Group 2015	0.056	0.056		
	(0.829)	(0.829)		
Pre-Trend test (p-value)	0.089	0.090		

Notes: Number of observations= 1260. Robust standard errors in parentheses. Column (a) reports estimates using never treated local governments as the control group, while column (b) reports estimates using the not yet treated local governments as the control group.

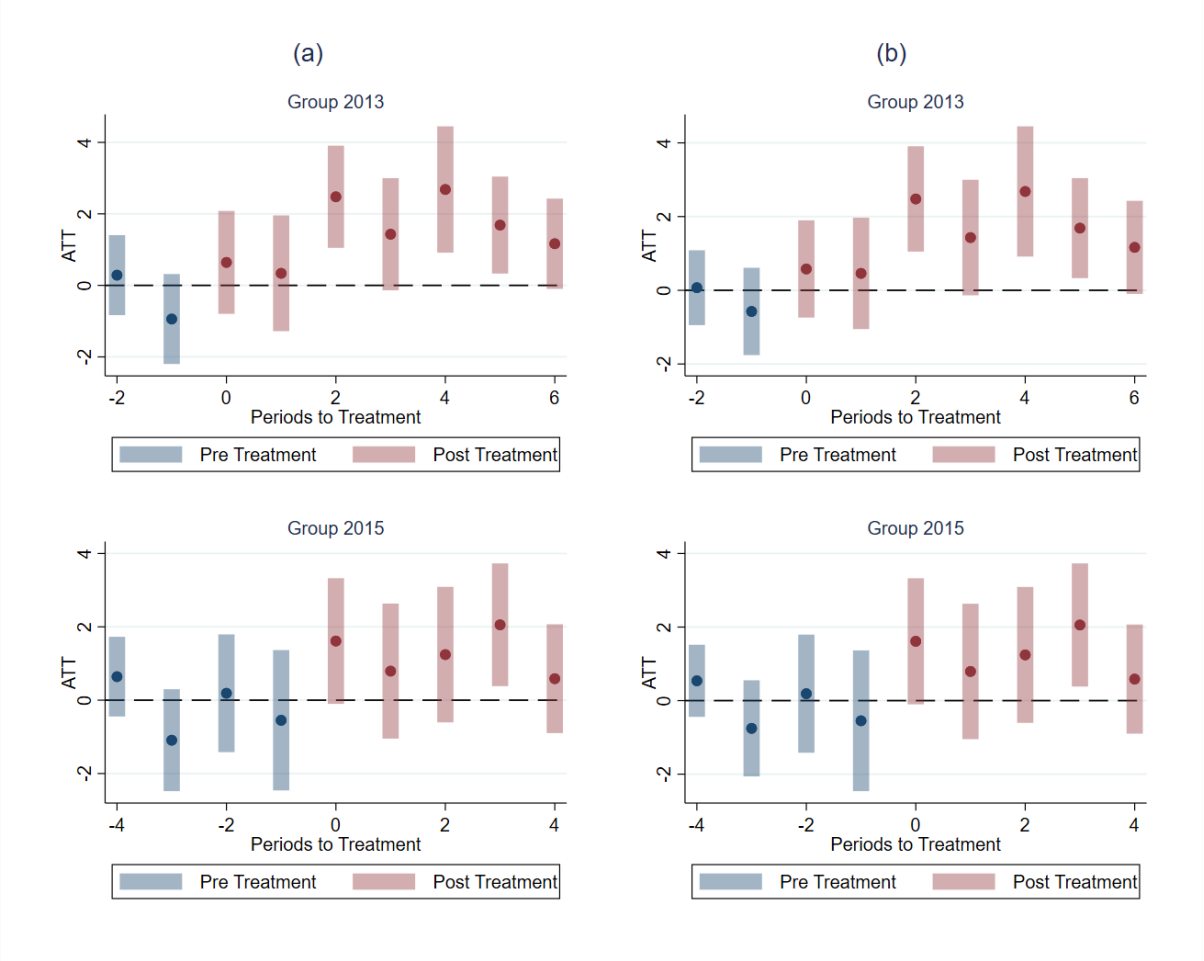

Figure 1. City deals group-time average treatment effects on real GDP growth.
Notes: Column (a) plots estimates using never treated local governments as the control group, while column (b) plots estimates using the not yet treated local governments as the control group. The dots represent point estimates and vertical shaded bars show robust 95% confidence bands. Group 2013 refers to the first wave of City Deals, while Group 2015 refers to the second wave.

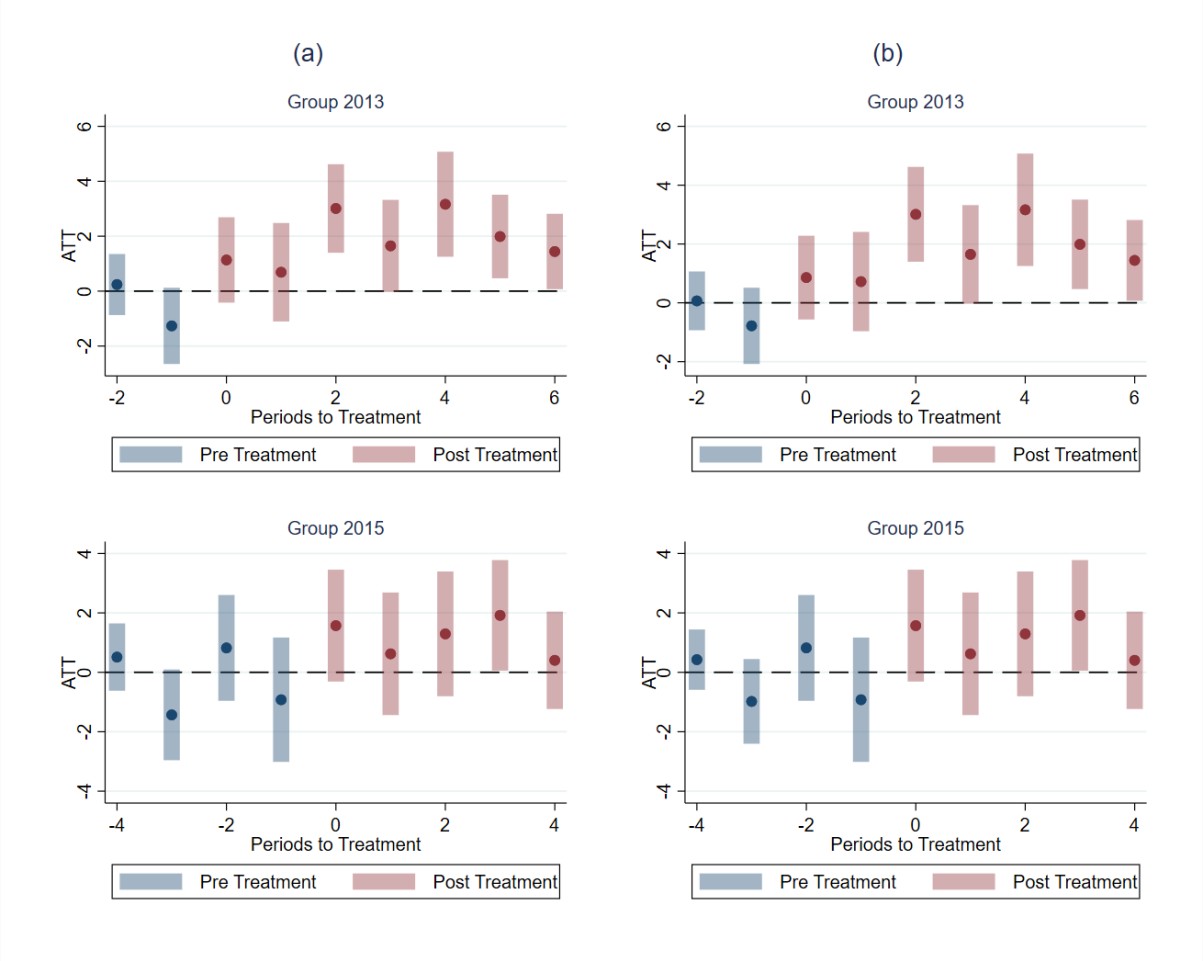

Figure 2. City deals group-time average treatment effects on real GVA growth.
Notes: Column (a) plots estimates using never treated local governments as the control group, while column (b) plots estimates using the not yet treated local governments as the control group. The dots represent point estimates and vertical shaded bars show robust 95% confidence bands. Group 2013 refers to the first wave of City Deals, while Group 2015 refers to the second wave.

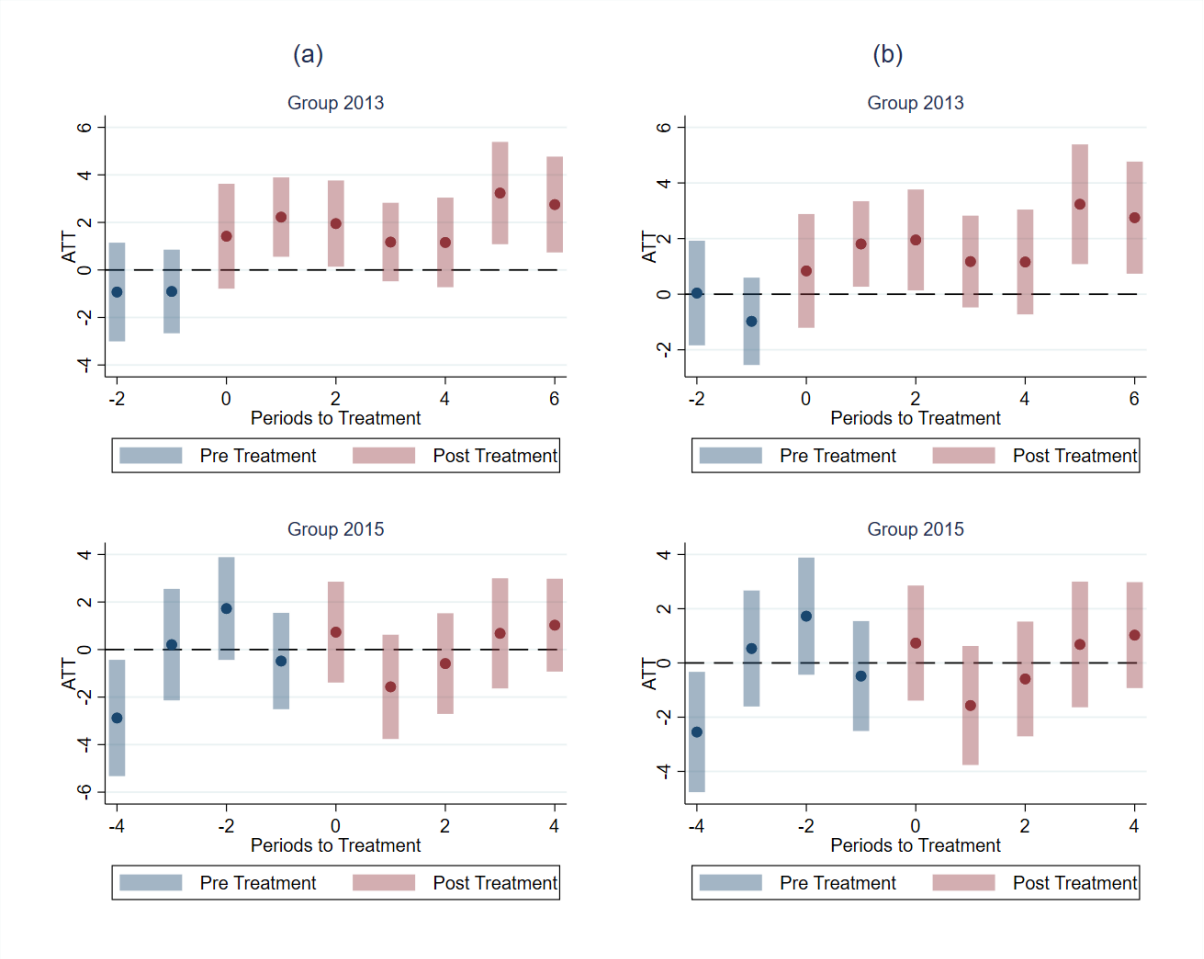

Figure 3. City deals group-time average treatment effects on jobs growth.
Notes: Column (a) plots estimates using never treated local governments as the control group, while column (b) plots estimates using the not yet treated local governments as the control group. The dots represent point estimates and vertical shaded bars show robust 95% confidence bands. Group 2013 refers to the first wave of City Deals, while Group 2015 refers to the second wave.

Appendix A: Supplementary materials

Table A1 *City Deals Aggregated Treatment Effects Estimates. Conditional parallel trends.*

	Callaway and Sant'Anna (2021)	
	Panel I: Real GDP growth	
	(a)	(b)
All treated	1.258	1.249
	(0.436)	(0.437)
By group:		
Group 2013	1.299	1.285
	(0.587)	(0.573)
Group 2015	1.195	1.195
	(0.677)	(0.677)
Pre-Trend test (p-value)	0.335	0.2976
	Panel II: Real GVA growth	
	(a)	(b)
All treated	1.434	1.408
	(0.479)	(0.481)
By group:		
Group 2013	1.646	1.603
	(0.631)	(0.616)
Group 2015	1.110	1.110
	(0.762)	(0.762)
Pre-Trend test (p-value)	0.284	0.271
	Panel III: Jobs density growth	
	(a)	(b)
All treated	1.108	0.964
	(0.569)	(0.568)
By group:		
Group 2013	2.141	1.904
	(0.704)	(0.676)
Group 2015	-0.479	-0.479
	(0.851)	(0.851)
Pre-Trend test (p-value)	0.102	0.124

Notes: Number of observations= 1260. Robust standard errors reported in parentheses. Column (a) plots estimates using as control group never treated local governments, while column (b) reports estimates using as control group the not yet treated local governments

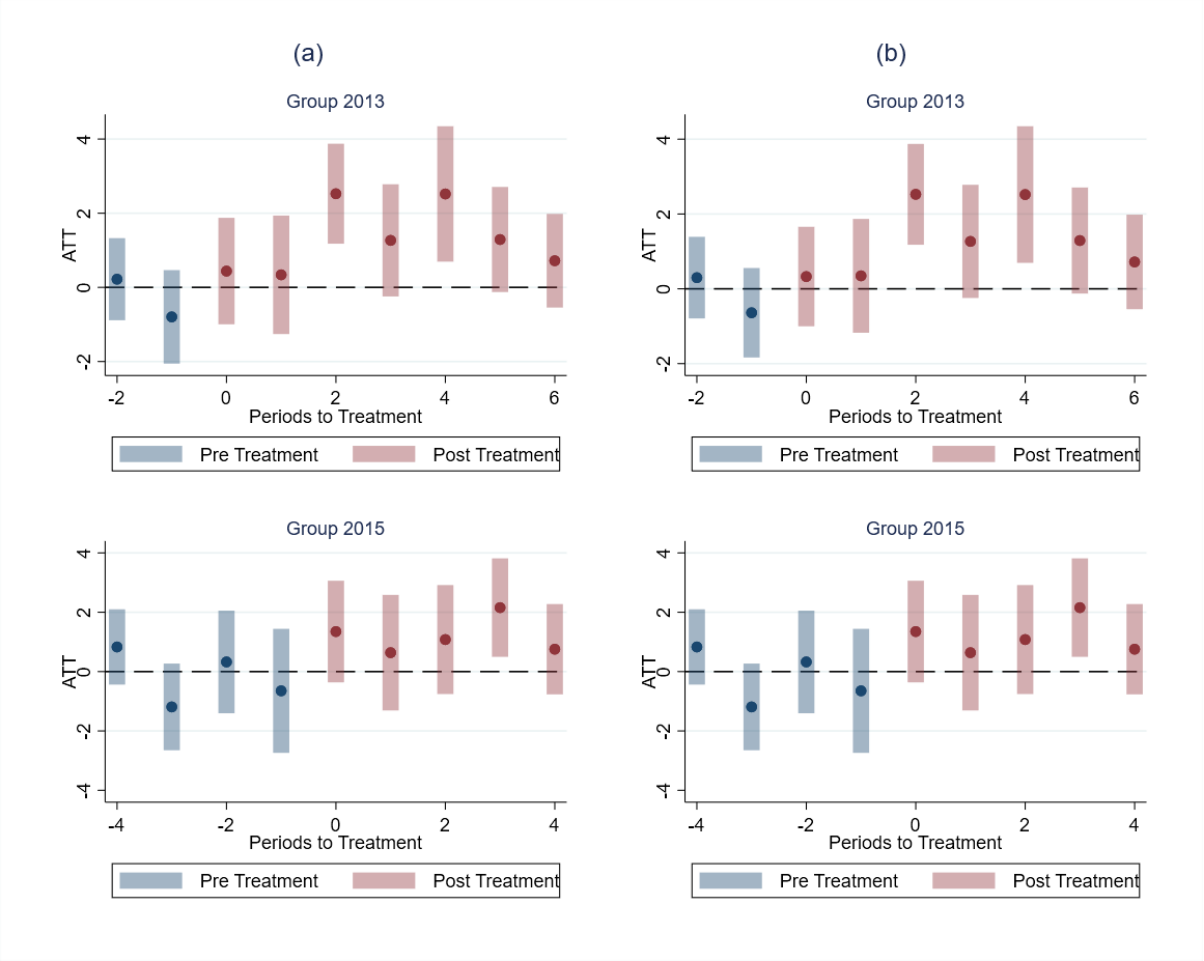

Figure A1. City deals group-time average treatment effects on real GDP growth. Conditional parallel trends

Notes: Column (a) plots estimates using never treated local governments as the control group, while column (b) plots estimates using the not yet treated local governments as the control group. The dots represent point estimates and vertical shaded bars show robust 95% confidence bands. Group 2013 refers to the first wave of City Deals, while Group 2015 refers to the second wave.

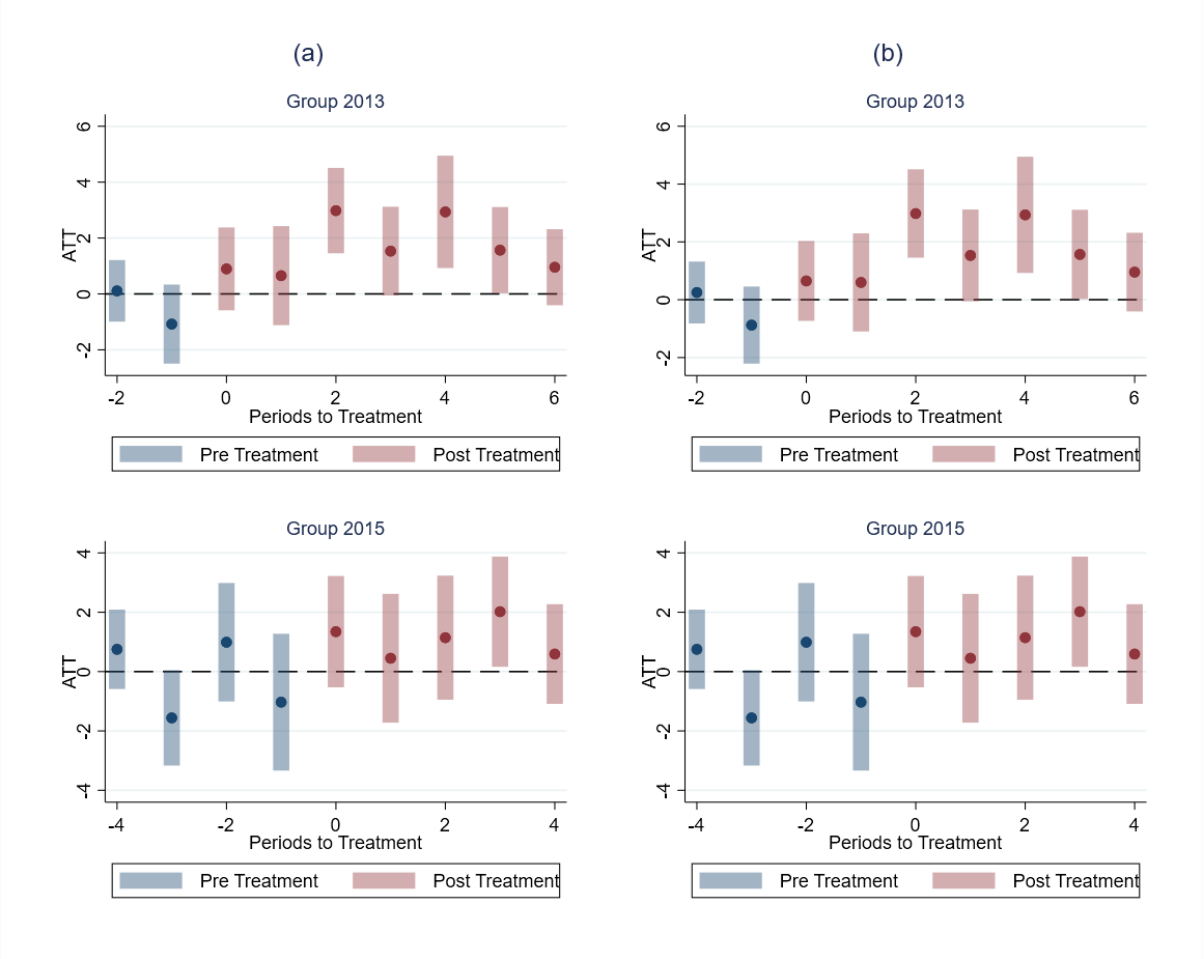

Figure A2. City deals group-time average treatment effects on real GVA growth. Conditional parallel trends

Notes: Column (a) plots estimates using never treated local governments as the control group, while column (b) plots estimates using the not yet treated local governments as the control group. The dots represent point estimates and vertical shaded bars show robust 95% confidence bands. Group 2013 refers to the first wave of City Deals, while Group 2015 refers to the second wave.

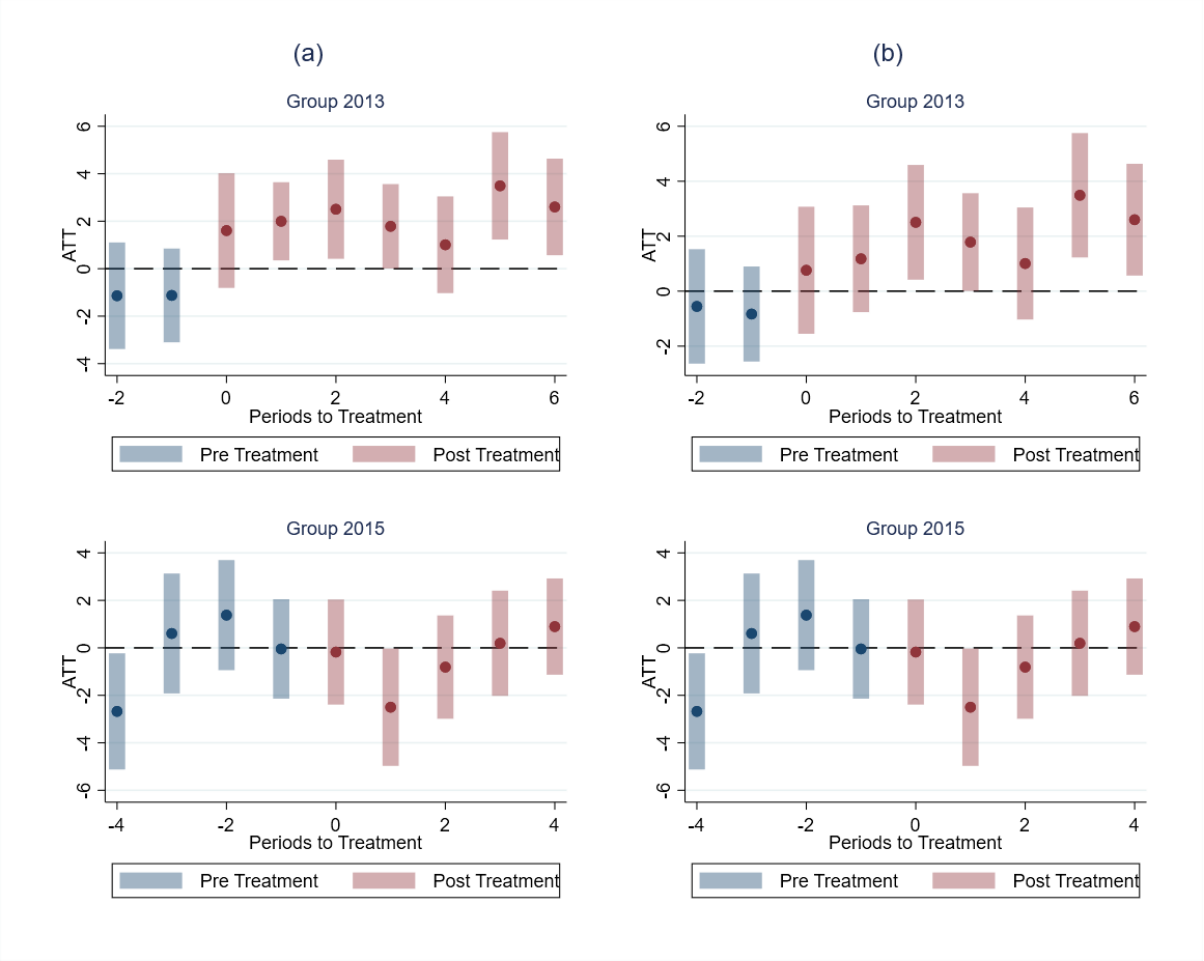

Figure A3. City deals group-time average treatment effects on jobs density growth. Conditional parallel trends

Notes: Column (a) plots estimates using never treated local governments as the control group, while column (b) plots estimates using the not yet treated local governments as the control group. The dots represent point estimates and vertical shaded bars show robust 95% confidence bands. Group 2013 refers to the first wave of City Deals, while Group 2015 refers to the second wave.