The Potential of Public Employment Reallocation as a Place-Based Policy

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October 31, 2024

This study explores public employment reallocation as a place-based policy to address regional economic disparities. It begins with a historical overview cataloging purpose-built and relocated capital cities and global decentralization efforts. Reviewing the economics literature, I find that recent public employment relocation policies positively impact receiving local labor markets, yielding an average multiplier of 7 private jobs per 10 public jobs relocated. Next, I present new evidence of Germany's "Homeland Strategy 2015" initiative run by the Bavarian state government, which aims to relocate over 2,000 public sector jobs from Munich to economically lagging regions by 2025. This policy is one of the first to employ a formulaic approach based on a structural index to determine receiving districts. Utilizing a novel, manually constructed dataset and a quasi-experimental design integrating long differences estimation and Mahalanobis distance matching, I find that treated municipalities experienced a statistically significant 0.9 percentage point increase in employment shares by 2019, and a decrease of 0.3 percentage points in unemployment shares in 2018 compared to control municipalities. The total population in treated municipalities increased by 1.3% in 2019, with an even more pronounced effect on the working age population. Preliminary findings also suggest that the relocation program benefited sending locations, with an increase in employment share, a decrease in unemployment share, and an increase in the working age population share. However, these results should be interpreted cautiously due to the varying sizes of the sending municipalities involved. The results indicate that strategically reallocating public sector jobs can revitalize local labor markets without significantly harming sending locations. However, the average multiplier effect of public jobs across studies in the literature reviewed is modest compared to other place-based policies.

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1 Introduction

Differences in income and productivity between countries remain large. However, differences within countries can be even larger. Evidence suggests that regional inequality within countries has widened, especially in developed countries. Take, for example, the United States, a country performing in the top decile of OECD countries. The average real GDP per person in the United States is about 90 percent higher than in Slovakia. At the same time, within the United States, per capita GDP in New York is 100 percent higher than in Mississippi (Bluedorn et al. 2019).

One might assume this phenomenon is unique to the US, as many researchers have pointed out that inequality has been increasing more in the US than in Europe. However, Germany exhibits similar trends. In 2022, Germany's GDP per capita was 1.9 times higher than Portugal's. Within Germany, the state of Hamburg's nominal GDP per capita was 2.3 times higher than that of Mecklenburg-West Pomerania.

Globalization, automation, and structural change contribute to these widening within-country gaps. Although, on aggregate, countries are becoming more prosperous, certain regions are not benefiting. Structural factors like the ones mentioned have uneven geographical impacts. Since both winning and losing industries agglomerate spatially, whole regions might experience exceptional growth while others suffer from exceptional decline and are left behind.

A prominent example is the comparison between the US cities Flint, Michigan, and Seattle by Enrico Moretti in his 2012 book, "The New Geography of Jobs" (Moretti 2013). Moretti points out that while Flint used to be an economic powerhouse during the manufacturing boom of the last century, it is now in decline, partly due to import competition from low-wage countries. At the same time, Seattle prospers through new jobs in the exporting knowledge economy. He concludes that this rift extends beyond these two cities, postulating that the US suffers from a "Great Divergence" driven by the concentration of high-skilled, high-paying jobs in certain areas. This concentration leads to a "brain drain" from struggling areas, creating a vicious cycle that perpetuates disparities over the long term.

Although Moretti acknowledges that European countries have labor market policies that are more rigid and less conducive to this kind of dynamic, he points out that studies have found similar effects in Europe (see Ehrlich and H. G. Overman (2020) for a detailed explanation of disparities across European cities). Germany also displays both sides of Europe's version of the Great Divergence. On one side are cities like Ingolstadt in Bavaria, a thriving high-tech manufacturing hub. On the other hand, roughly 150 miles away are cities like Schweinfurt, a declining area suffering from plant closures and job cuts (Steiche, Norbert 2024; Steiche, Norbert and Mossburger, Thomas 2024; Steiche, Norbert, Kleinschroth, Conny, et al. 2024). Ingolstadt's nominal GDP per capita was 5.5 times higher than Schweinfurt's in 2021. This stark contrast exemplifies the growing divide between prosperous high-tech manufacturing centers and struggling former industrial strongholds. In Germany, the divergence is more pronounced within the manufacturing sector than between the manufacturing sector and the knowledge-intensive IT services sector as in the US. As Moretti points out, Germany is one of the few countries that so

far has been able to retain and develop a high-tech manufacturing sector.

Policymakers use place-based policies to create jobs in distressed communities. Neumark and Simpson (2015) depict place-based policies typically as efforts to target job opportunities and higher wages in a specific area and contrast them with "people-based" policies, such as the Earned Income Tax Credit in the US, that try to help deprived people regardless of where they live or how concentrated they are (see Neumark and Simpson (ibid.) for a complete discussion of place-based policies). Examples of place-based policies are tax credits, public infrastructure, land development, and customized business services. However, attracting these firms or creating whole clusters is often daunting for policymakers with limited resources.

Traditional policies targeting firms often prove costly relative to the jobs created. Slattery (2024) finds that subsidy competition in the US increases total welfare by about 3% compared to a subsidy ban. However, states compete away most of the surplus, transferring most welfare gains to firms. Current government business incentives cost almost 50 billion USD annually but are not well-targeted at distressed areas (Bartik 2020). In aggregate, states would be better off with a subsidy ban (Slattery 2024).

Given these limitations, policymakers are exploring alternative strategies to promote economic development in lagging regions. One approach is the strategic reallocation of public employment.

While not immediately apparent, most public employment reallocation programs are designed as place-based policies, even if they are not explicitly labeled as such. In their chapter, Freedman and Neumark (2024) outline the critical dimensions of place-based policies, which include geographic targeting, incentive structure, and distribution method. Public employment reallocation programs align with these dimensions in several ways.

Geographic targeting: Programs select specific regions for intervention, though the selection process varies. Some countries utilize what Freedman and Neumark (2024) call a formulaic approach, while in others, the selection of receiving locations is left to the discretion of policymakers. Examples of the formulaic approach are programs in Germany, Norway, and Canada. Germany utilizes a structural indicator incorporating demographic and economic metrics, Canada employs an economic-only index, and Norway relies on an index that prioritizes less central receiving locations. In discretionary cases, it is less clear why a receiving location is selected. Some new capital locations were moved to the ruling president's home region. Examples are Côte d'Ivoire, Malawi, Senegal, Zimbabwe, and Libya (Rossman 2016).

Incentive structure: Unlike traditional place-based policies incentivizing firms, relocation programs' incentives primarily target public sector employees. These incentives can entail relocation packages or professional training packages, as seen in Bavaria's benefits scheme for employees who agreed to relocate. Instead of incentives, the first Trump administration in the US opted for mandatory reassignments for the headquarters of the Bureau of Land Management to Colorado, and the National Institute of Food and Agriculture (NIFA), and the Economic Research Service (ERS) that provide research services for the Department of Agriculture to Kansas City. In both cases, most of the relocated employees left the agencies. This approach resulted in a considerable loss of knowledge in the agencies, disrupted operations, and a dispute with the National

Treasury Employees Union Congressional Research Service (CRS) (2020), Olalde (2024), and Targeted News Service (2024).

Distribution method: Programs are typically a one-off allocation. Reassessment of eligible locations typically occurs only for program extensions. Germany's second wave of the Homeland Strategy announced in 2018 updated the target index but maintained eligibility for previously selected locations even if they no longer qualified. Though place-based policies often overlap with other policies (Kolko 2010), Bavaria explicitly excluded municipalities that had benefited from other initiatives like the state's University Initiative.

Public employment reallocation has evolved through two approaches: capital city relocations and decentralizing programs. Capital relocations have often served as early examples of public employment reallocation for regional development. While many factors drive these decisions, including politics, security, congestion, and environmental threats, fostering geographically targeted development was the primary motivation in Brazil, South Korea, Tanzania, and the upcoming relocation in Mongolia. Regional development was a secondary objective in Pakistan, Nigeria, Kazakhstan, Guinea, Zimbabwe, and Ghana. Several nations are evaluating capital relocations to stimulate development in lagging regions, mitigate congestion and security risks, or adapt to environmental challenges like rising sea levels.

Since the 1960s, public employment reallocation has transitioned from centralized to decentralized strategies, moving jobs from capital cities to other regions. Initial efforts emphasized cost reduction, congestion relief, and political reasons rather than place-based policy objectives, as exemplified by UK programs from 1963 to 1993 and Germany's post-1991 initiative to balance public sector employment in East and West regions post-reunification. Norway has persistently relocated jobs from Oslo since the mid-1960s to decentralize state power. However, contemporary programs explicitly target regional development, as exemplified by South Korea (2011-2018), Sweden (2004-2019), Denmark's "Better Balance" policy (2015-2018), and ongoing efforts in Germany (since 2015) and France (since 2019). Canada, France, Germany, Mexico, Norway, the UK, and Zimbabwe have ongoing initiatives. Among those, high-income countries emphasize regional development objectives, while Mexico and Zimbabwe prioritize decentralizing services for enhanced local public goods provision.

Current research on capital relocations shows limited and mixed outcomes. While employment and population increase in receiving locations, some sending locations lose economic importance. However, so far, there are only a few examples analyzed in the literature (mainly Germany and Brazil), highlighting the need for a more systematic study of the effects on sending and receiving capital locations.

In terms of decentralization programs, I find that the literature, albeit small, has evolved significantly. While theoretical models and studies on national public sector changes predict a crowding-out effect, empirical investigations of targeted relocation programs have identified crowding-in effects, particularly in the services sector.

The canonical theoretical framework employs two-sector spatial general equilibrium models with monopolistic competition in the private sector. The models assume homogenous workers, iceberg trade costs between cities, and divide the private sector into traded

and non-traded sectors. An influx of public sector workers increases local demand for non-traded and traded goods. This raises non-traded prices and employment, but higher costs from increased housing prices can reduce traded sector employment. Theory pitches the short-term multiplier effect against long-term general equilibrium effects.

Two major trends emerge in the empirical literature. First, findings vary based on the type of public jobs relocated. Auricchio et al. (2020) find that artificially increasing the local public sector that provides local public goods is harmful to private employment, while Faggio find that relocating traded public services provided at the national level increases private employment. Second, results differ by the geographical level of analysis. Studies on national public sector changes between censuses (Faggio and H. Overman 2014; Senftleben-König 2014; Auricchio et al. 2020) find a crowding out of private jobs, especially in the traded sector. However, analyses of targeted relocations to specific local labor markets that resemble place-based policies (Jofre-Monseny et al. 2020; Faggio 2019) identify positive multipliers driven by the services sector. Key empirical determinants of the multiplier size include the employment-to-population ratio, baseline unemployment rate, size of the public employment shock, and distance between sending and receiving locations. The placement of agencies within the receiving locality also matters. There is limited evidence of detrimental effects on sending locations post-relocation.

This study contributes to the expanding body of literature on public employment reallocation by leveraging a quasi-experimental design with ex-ante knowledge of the geographical distribution of relocations and agencies. Distinct from prior research, this paper analyzes a policy that utilizes a structural index based on five demographic and economic indicators to determine relocation districts, thus providing a more robust framework for analysis. Additionally, sites that were involved in other policy programs, like the Bavarian University Initiative, were not eligible for the relocation policy. The focus is on the "Heimatstrategie 2015," a public employment redistribution initiative in Germany to fulfill the country's national goal of equal living and working conditions between urban and rural areas. The strategy entailed decentralizing public sector jobs from mainly the state capital of Munich to economically lagging inland regions. The average size of the treatment was 1.3% of local employment. Some municipalities get relocations that amount to up to 10% of the local employment. Utilizing a manually constructed, novel dataset, the paper evaluates the impact of these relocations on local labor market outcomes through an analytical approach that integrates long differences estimation and matching. This approach is applied to a sample comprising treated municipalities within Bavaria and control municipalities outside Bavaria. To avoid biasing the estimates with the mechanical impact of the relocation, I deduct the number of jobs relocated per year from yearly employment measures.

The findings indicate that local employment increased since the relocations started in 2015. Compared to 2014, employment shares in treated municipalities increased by 0.9 percentage points in 2019. At the same time, unemployment shares decreased slightly each year since 2015, except for 2016. In 2017, unemployment shares decreased significantly by 0.20 percentage points, and in 2018, by 0.30 percentage points.

In terms of population, I find that treated municipalities experienced a statistically significant increase in the total population following the policy implementation, with the

effect growing from 1.2% in 2017 to 1.6% in 2018 before settling at 1.3% in 2019. The impact on the working age population was even more pronounced, with an increase of 1.6% in 2017, peaking at 2.1% in 2018, and then slightly declining to 1.8% in 2019.

This study also investigates the impact of the relocation program on its sending locations, which include Munich as the main sending location alongside seven other localities. The treatment, in this case, is the withdrawal of public sector jobs at the municipal level. Due to the low number of treated units, a canonical two-period, static difference-in-differences estimation is employed, with control group units matched through a Mahalanobis distance as before. The analysis reveals that sending locations experienced an increase in the employment share by 0.77 percentage points and a decrease in the unemployment share by 0.59 percentage points after the relocation of public sector employees. Additionally, the working age population share increased by 1.1 percentage points in these locations. However, the results should be interpreted cautiously due to the low number and varying sizes of sending municipalities, ranging from large cities like Munich to smaller locations like Herrsching, Bavaria. Despite this limitation, preliminary findings suggest that the relocation program did not harm but rather benefited the sending locations.

Overall, this study finds that public employment reallocation positively affects local labor markets and population outcomes and can serve as a place-based policy tool for policymakers to revive distressed areas. Additionally, the fact that the literature does not find a considerable crowding-out effect in sending regions means that policymakers can use public employment reallocation without significantly hurting sending locations. However, this type of place-based policy is not a panacea. Suggestive evidence shows that blowing up local public goods provision beyond local demand, as in the example of Italy (Auricchio et al. 2020), leads to deep inefficiencies beyond the local labor market.

It is also critical to recognize that the multiplier effect associated with public employment is relatively modest compared to other place-based policies. For instance, Moretti (2010) identifies multipliers as high as 4.9 for interventions regarding the high-tech industry. For every 10 high-tech jobs relocated, 49 additional jobs are created in the rest of the private sector. In contrast, this review yields an average multiplier of 0.7 for public employment; this implies that every 10 jobs created in the public sector generate an additional 7 jobs in the private sector. Such findings underscore the need for nuanced policy design and realistic expectations when leveraging public employment as a tool for regional economic development.

Additionally, more research is needed to answer the remaining questions. Is the long-term effect on traded jobs truly as small as current studies find so far? Also, women are over-represented in the public sector (Gornick and Jacobs 1998; Gomes and Kuehn 2019), and are also disproportionately affected by changes in the size of the public sector and austerity measures (Glasmeier and Lee-Chuvala 2011). Is there a gendered effect of public employment reallocation? If yes, what are the long-term cultural effects? Studies should also be analyzed regarding the places vs. people framework, as highlighted by Glaeser and Gottlieb (2008). Are the new public jobs being filled with locals who suffered from previously negative shocks, or are new residents reshaping the areas, as is the case in regions that bounced back from the China shock in the US (see Autor et al. (2021))?

This chapter is structured as follows. The next two sections set the stage by delineating the historical background of public employment reallocation efforts throughout history and then reviewing available evidence on government efforts or considerations around the world to alter the distribution of public sector employment. Section four presents new evidence on the first six years of the Homeland Strategy relocation program in Germany, and section five concludes.

2 Historical Overview

In the following section, I present examples of public employment reallocation worldwide. The objective of this chapter is to lay out the historical framework for the literature review in the next chapter. First, I dive into the history of purpose-built and relocated capital cities. These were one of the first forms of deliberate public employment reallocation to certain localities. Then, I go on to explain the opposite phenomenon of decentralization of public employment, most from capital cities to inland regions.

2.1 Purpose-Built Capital Cities

Capital cities function as the administrative centers of their respective countries and typically develop through a process of historical evolution. However, economic theory posits that capital cities should be situated in a central location within the country in order to optimize revenue collection and enhance the effectiveness of governance (Olsson and Hansson 2011). Despite this theoretical prediction, the majority of modern capital cities are not located in central areas due to various factors such as geographical constraints, military considerations, cultural significance of other sites, and political influences. For example, during the colonial era, capital cities were frequently established in coastal regions to facilitate the extraction of resources and trade, which has led to long-term challenges such as uncontrolled urban expansion and regional economic disparities between coastal regions and inland areas[1] (Rossman 2016).

In recent decades, several countries have made the deliberate decision to relocate their capital cities as a form of de facto place-based policy with the aim of addressing regional economic inequalities. One of the most notable examples of this trend include Brazil's capital relocation to Brasília in 1960, Tanzania's ongoing relocation to Dodoma which began in the 1970s, South Korea's relocation to Sejong in 2012, and Mongolia's planned relocation from Ulaanbaatar.

The inauguration of Brasília as the new capital of Brazil in 1960 under the presidency of Juscelino Kubitschek was motivated by the goal of promoting development in the country's inland regions as part of Kubitschek's "Fifty Years of Progress in Five" agenda. The construction of Brasília as a purpose-built capital was intended to counterbalance the economic dominance of coastal cities and stimulate economic growth in the interior of Brazil. The development of Brasília involved substantial investments in infrastructure,

[1] See Table 1 for a (non-exhaustive) list of examples of purpose-built or relocated capitals since the 18th century.

including the construction of highways connecting the new capital to other major cities, as well as the establishment of new administrative buildings, residential areas, and support facilities (Rossman 2016). As a result, Brasília saw substantial increases in population, employment, and GDP (Quistorff 2015). On the other hand, the move had only a modest impact on the spatial distribution of the Brazilian population (Grimes et al. 2017). The development of Brasília represented a significant drain on national resources, consuming up to 2% of Brazil's GNP. This investment pre-empted other necessary investments and contributed to inflationary pressures in the 1960s (Hay 1979).

The capital relocation had significant social, economic, and political repercussions for the former capital, Rio de Janeiro. The city's share in the national GDP dropped from 16.7% to 11.2% between 1970 and 2011 (Osorio and Versiani 2014). Rio de Janeiro's political influence diminished significantly after the capital moved. The city's political representatives lost their prominence in national politics, although there was some recovery in the early 21st century (Neto and Santos 2013). Contrary to expectations, the relocation did not significantly affect Rio de Janeiro's population size or employment levels (Quistorff 2015), but the city lost its status as a financial center (Contel and Wójcik 2019).

The relocation of South Korea's capital to Sejong in 2012 is perhaps the most clear-cut example of using capital city status as a place-based policy. Prior to the relocation, Seoul was home to 56% of all manufacturing companies, 95% of Korean corporations, and 65% of the country's top universities. Although security concerns related to the proximity to North Korea played a role in the decision, the primary motivation for the relocation was to achieve a more balanced pattern of national development. The government selected Sejong as the new capital, naming it after Sejong the Great, the 15th-century king who is credited with creating Korea's native phonetic alphabet. The location of Sejong, 75 miles south of Seoul, was chosen due to its position at the intersection of major transportation networks (Rossman 2016).

Tanzania's ongoing relocation of its capital from Dar es Salaam to Dodoma, which began in the 1970s, is similarly motivated by the goal of decentralizing development. The relocation to Dodoma represents the longest-running capital relocation project, primarily due to limited budget allocation. Between 1973 and 1986, the project was allocated only 39% of its required budget, and from 1987 to 2002, it received less than 3 million USD. The selection of Dodoma as the new capital was based on its equidistant position from major tribal regions and its location in an area with limited economic development. Government operations continue to be split between both cities, with many embassies remaining in Dar es Salaam (ibid.).

Mongolia's initiative to relocate its capital from Ulaanbaatar in 2024 is a response to the concentration of over 40% of its population in the current capital. The government has designated roughly 189,000 hectares in the Orkhon Valley for the "New Kharkhorum City" project and launched an international design competition in March 2024. The relocation aims to address both regional development imbalances and the challenges faced by Ulaanbaatar, including water scarcity, air pollution, and housing shortages (Rossman 2016; Sambuunyam 2024).

In other cases, regional development has served as a secondary motivation alongside

other objectives. Pakistan's relocation to Islamabad in 1959 was primarily motivated by security concerns, but the development of the northern regions to balance the historical dominance of the coastal south was also a significant consideration. Nigeria's relocation from Lagos to Abuja in 1991 was mainly aimed at addressing ethnic tensions, but reducing regional disparities was also a factor. Kazakhstan's capital move from Almaty to Astana (now Nur-Sultan) in 1997 reflected spatial constraints, concerns over seismic activity, but also economic development motives. Similar patterns can be observed in the relocations of capitals in Guinea, Zimbabwe, and Ghana (Rossman 2016).

Currently, several countries are discussing capital relocations with economic development in areas lagging behind as a key consideration. Kenya is debating moving from Nairobi to promote development in the country's north, with Konza Techno City, known as "silicon savannah", emerging as a potential candidate. Other nations contemplating relocations cite different motivations, such as congestion (Senegal, Philippines) or security issues (Equatorial Guinea) (ibid.).

Environmental factors are also increasingly driving capital relocation discussions. Rising sea levels threaten Liberia's capital, Monrovia, potentially necessitating a move to Zekepa. Bangkok's subsidence rate of one centimeter annually has prompted Thailand's parliament to establish a special commission to study relocation options to Nakhon Nayok or Phetchabun. The Maldives is developing Hulhumalé, an artificial island, as a potential replacement for flood-prone Malé (ibid.). Climate projections suggest that environmental pressures may accelerate capital relocations, particularly in coastal and low-lying regions (Smid et al. 2019).

The impact of capital relocations remains a topic of ongoing research, with limited and mixed evidence available. In the case of Brazil, the relocation of the capital strained national resources, only modestly redistributed the urban population, and decreased Rio de Janeiro's contribution to national GDP. However, it also had a positive impact on employment and population in Brasília without any negative effect on these measures in Rio. In other instances, such as Islamabad in Pakistan and Abuja in Nigeria, capital relocations have led to improved living conditions and significant population growth, with Abuja growing from 800,000 inhabitants in 2006 to 4 million this year. Despite these potential benefits, many capital relocations have been marred by corruption scandals and implementation challenges (Rossman 2016). Apart from a few cases, there is a scarcity of evidence on the effects of capital relocations on both the sending and receiving locations, emphasizing the need for more systematic research on capital relocations as place-based policies[2].

[2]Faggio (2019) and Becker et al. (2021) analyze the cases of capital relocation in Germany. However, the German capital was relocated due to political reasons and not due to regional development concerns.

Table 1. Non-exhaustive list of capital relocations since the 18th century. Purpose-built capitals in bold. The list was based on Rossman (2016), and expanded and updated by the author.

Country	Sending	Receiving	Objective	Period
USA	Philadelphia	Washington, D.C.	Political Reasons	1791
Canada	Montreal	Ottawa	Security concerns, ethnic conflict	1857
South Africa	Potchefstroom	Pretoria	Strategic Location	1860
Australia	None	**Canberra**	Rivalry between Sydney and Melbourne	1908
India	Calcutta, Kolkata	**New Delhi**	Congestion, Security concerns	1911
Russia	Saint-Petersburg	Moscow	Political Reasons	1918
Albania	Dürres	Tirana	Political Reasons, Strategic Location	1920
Turkey	Constantinople (Istanbul)	**Ankara**	Break from Ottoman past, Location	1923
Australia	Melbourne, Sydney	Canberra	Improve governance, create a purpose-built capital	1923
Guinea-Bissau	Bolama	Bissau	Colonial policies	1941
China	Nanjing	Beijing	Political Reasons	1949
Germany	Berlin	Bonn	Political Reasons	1949
Mauretania	Sant-Louis	**Nouakchott**	Nation building, Centrality	1957
Senegal	Saint-Louis	Dakar	Nation building	1958
Brazil	Rio de Janeiro	**Brasília**	Promote equal development, less congestion	1960
Botswana	Mahikeng	**Gaborone**	Independence, political reasons	1961
Rwanda	Butare	Kigali	Independence, political reasons	1962
Uganda	Entebbe	Kampala	Independence, political reasons	1962
North Yemen	Ta'izz	Sana'a	Nation building, political reasons	1962
Pakistan	Karachi	**Islamabad**	Security concerns, regional development	1966

Continued on next page

Table 1 continued

Country	Sending	Receiving	Objective	Period
Libya	Bayda / Benghazi	Tripoli	Independence, political reasons	1969
Belize	Belize City	**Belmopan**	Natural Disaster (Hurricane Hattie in 1961)	1970
Malawi	Zomba	Lilongwe	Political reasons	1974
Côte d'Ivoire	Abidjan	**Yamoussoukro**	Political reasons	1983
Libya	Tripoli	Sirte	Political Reasons	1988
Federated States of Micronesia	Kolonia	**Palikir**	Decentralization	1989
Chile	Santiago	Valparaiso	Political Reasons	1990
Tanzania	Dar es Salaam	**Dodoma**	Location, Regional development	1996 (ongoing)
Nigeria	Lagos	**Abuja**	Location, ethnic conflict, and congestion	1991
Kazakhstan	Almaty	**Astana** (now Nur-Sultan)	Geographical centralization, drive northern economic development, avoid earthquakes and mudslides	1997
Germany	Bonn	Berlin	Political Reasons	1999
Malaysia	Kuala Lumpur	**Putrajaya**	Congestion	1999
Myanmar	Yangon	**Naypyidaw**	Security concerns	2005
Palau	Koror City	**Ngelrulmud**	Political reasons, regional Development	2006
Indonesia	Jakarta	Nusantara	Climate Change, Congestion	2024 ongoing

2.2 Decentralization Efforts

2.2.1 Completed Programs

Since the 1960s, there has been a shift in policy orientation from centralization to decentralization. Over time, capital cities have exhibited substantial growth, while other regions have not experienced commensurate prosperity (Carroll and Meyer 1982; Heider et al. 2018). In an effort to alleviate such economic disparities, policymakers have increasingly advocated for decentralization strategies aimed at reallocating economic activities from

capital cities to interior areas. Since the main objective behind these relocations is to promote more equitable economic development trajectories in certain lagging-behind regions within a country, they are de facto place-based policies. Prominent examples of relocation programs that were implemented as a place-based policy are the ones in South Korea from 2011 to 2018 (Lee et al. 2024), Sweden from 2004 to 2019 (Sjoestedt Landen 2012), Germany since 2015 (Bayerisches Staatsministerium der Finanzen 2024), Denmark from 2015 to 2018 (Jyllands-Posten 2015), the United Kingdom from 2004 to 2010 (Home Office 2009), and France since 2019 (Direction Interministérielle de la Transformation Publique 2022).

However, equity in economic opportunity is not the sole motivation behind reallocation programs. Other motivations for decentralization include cost-saving measures and the alleviation of congestion in capital cities, as evidenced in earlier programs in the United Kingdom between 1963 and 1993 (Jefferson and Trainor 1996). Political considerations also influence these policies. For example, post-reunification Germany sought to balance the distribution of public sector employment between the former East and West regions from 1992 onward (Deutscher Bundestag 1992). Norway has a long-standing tradition of relocating public sector jobs from Oslo to regional centers, with multiple waves of relocations since 1964 under both Labour and conservative governments in response to criticism that state power was too centralized in Oslo (Tufte 2023).

The United Kingdom has spearheaded public employment reallocation efforts with the largest number of jobs relocated. Since 1963, approximately 95,000 positions have been transferred from London and the South East to other regions across all programs implemented (Jefferson and Trainor 1996).

Following closely is South Korea's initiative launched in 2003 to foster equitable growth across regions. As of the end of 2018, South Korea successfully relocated over 52,808 employees from 128 entities at a cost of approximately USD 10 billion (Lee et al. 2024).

In continental Europe, France and Germany have been notable examples. Between 1960-1991, approximately 25,350 jobs were relocated from Paris, followed by an accelerated phase of 17,260 relocations during 1992-1999. While initially focused on decentralizing from Paris to address regional inequalities, the policy evolved after 1991 to emphasize developing competitive regional metropolitan hubs capable of rivaling European economic centers like Milan in Italy and Frankfurt in Germany. The Comité pour l'Implantation territoriale des Emplois Publics (CITEP) managed these relocations, with implementation costs estimated at 81,000-110,000 Euros per transferred position. Data from 2001 reveals that paradoxically, the Île-de-France region remained the largest beneficiary with 5,503 relocated positions, followed by Rhône-Alpes and Aquitaine (François-Poncet 2003).

In Germany, the first effort was prompted by the Independent Federalism Commission, which was formed after reunification to achieve an equitable distribution of federal agencies across East and West Germany. The commission proposed relocating 16 federal agencies, including the Federal Court for Labor Law, the Federal Environment Agency, and the former Federal Social Insurance Institution (Deutscher Bundesrat 1992). Ultimately, most recommendations were enacted through various legislative measures despite difficulties. However, the commission was dissolved in 1994, and there is no record of how many jobs exactly were reallocated.

Following Germany, Denmark has undertaken substantial efforts to reallocate government jobs, with approximately 8,000 positions moved out of Copenhagen under the "Better Balance" policy. Initiated in 2015 by Prime Minister Lars Løkke Rasmussen, this policy was executed in two phases: "Better Balance I" in 2015 and "Better Balance II" in 2018. The objective was to decentralize roughly 10% of all state-sector positions, involving 89 institutions across 49 cities, estimating expenses at approximately 222 million USD as of 2022 (Jyllands-Posten 2015). Between 2004 and 2019, the Swedish government executed a program aimed at relocating approximately 4,000 jobs from Stockholm to Northern inland regions. This program entailed moving personnel from around 62 government agencies (Sjoestedt Landen 2012).

2.2.2 Ongoing and Proposed Programs

To enrich my public employment reallocation catalog with upcoming and recent public employment relocation programs, I conducted a structured news search using the Nexis database, a comprehensive global database covering news and legal information from over 180 countries in 50 languages. Details on the search query, inclusion and exclusion terms, and coverage over time are included in the appendix. This ongoing study will be updated as more results are processed.

Overall, I find ongoing reallocation programs in Canada, France, Germany, Mexico, Norway, the UK, and Zimbabwe. Initial findings suggest that high-income countries like Austria, Canada, France, Germany, Norway and the UK are prioritizing regional development as the primary driver for their reallocation efforts, making these programs de facto place-based policies.

The "Homeland. Country(side). Livability" initiative in Austria, inaugurated in 2017, aims to decentralize federal administrative functions by relocating approximately 3,500 jobs, constituting 10% of the total federal administrative positions, from Vienna to rural areas over a ten-year period. This initiative takes its cue from the Bavarian Homeland Strategy in Germany mentioned above (Bayerische Staatsregierung 2017). However, there is little information on the progress of the implementation of the program.

In Canada, Quebec has a major coordinated program, the "Plan gouvernemental de régionalisation de 5,000 emplois de l'administration publique," aiming to relocate 5,000 public administration jobs from urban areas to regions by 2028, involving 55 public administration organizations (The Gazette 2021).

Similarly, France has initiated a substantial job relocation program targeting the redistribution of 6,000 civil service positions from Paris to medium-sized cities by the year 2027. This initiative, which commenced in 2019, forms part of a comprehensive strategy to decentralize governmental functions and diminish the concentration of public sector employment within Paris. This plan is consistent with President Macron's broader public service reform objectives, which prioritize bringing government services nearer to French citizens, but foremost promoting regional development (Direction Interministérielle de la Transformation Publique 2022).

Recent German initiatives such as Bavaria's Homeland Strategy have been also focusing on convergence between urban centers and rural areas. Launched by the Bavarian state

government in 2014 with an initial timeline from 2015 to 2025 and extended by a second phase in 2018 to run until 2030, this program aims to redistribute approximately 5,950 jobs from Munich to other inland regions within Bavaria across both phases (Bayerisches Staatsministerium der Finanzen 2024). Furthermore, the German Federal Government has announced plans to reallocate an additional 5,000 federal public sector jobs by 2028 as part of a strategy to mitigate the socioeconomic impacts of the energy transition on coal mining regions (Deutscher Bundestag 2024). In this book chapter, I later empirically analyze the impact of the first years of the Bavarian program.

Since 2023, Norway is implementing a significant program to shift public sector jobs away from Oslo to less central regions, particulary to the Northern Norway and Finnmark regions. The regional policy goal is to locate agencies in specific regional centers where they have the greatest potential to contribute to job growth (Regjeringen 2023).

The UK government is planning an reallocation effort of 22,000 jobs out of London by 2027. The Places for Growth (PfG) programme is a UK government initiative launched in 2019 to decentralize civil service roles from London across the United Kingdom. Originally targeting 22,000 role relocations by 2030, the program exceeded its interim goal of 15,000 relocations by 2025, achieving 16,061 relocations by Q3 2023. As a result, the government revised its target to complete the 22,000 relocations by 2027. The program aims to create a more geographically diverse civil service, with key objectives including ensuring 50% of UK-based Senior Civil Servants are located outside London by 2030 and increasing government presence across Scotland, Wales, and Northern Ireland. The majority of relocations have been to the North West of England (21%) and Yorkshire and the Humber (19%), with significant clusters in cities like Leeds, Manchester, and Glasgow (Government of the United Kingdom 2024).

In Mexico, and Zimbabwe the focus is not on regional development, but primarily on decentralizing services to improve local public goods provision to citizens. In Zimbabwe, civil servants from the Matabeleland North province are relocating to Lupane to bring services closer to the people as part of the country's Vision 2030 (The Chronicle 2024). Mexico's previous president, Andrés Manuel López Obrador, initiated a relocation project that was delayed, allegedly due to the COVID-19 pandemic. The new president, Claudia Sheinbaum, is reassessing whether the program will continue. To date, only 7 of the 16 ministries selected for the program have been relocated (CE Noticias Financieras English 2024).

Decentralization or relocation proposals are being discussed, but not yet implemented in Liberia, Sierra Leone, Canada at the federal level, and the United States.

Liberia's case involves decentralizing the Ministry of Transport to enhance accessibility and service delivery, but does not mention distinct agency relocations. Sierra Leone aims to decentralize service delivery by empowering local governments to bring essential services closer to the people as part of a new policy to overhaul the public sector (FrontPageAfrica 2024).

In Canada, public support is growing for decentralizing federal jobs, especially in Alberta and Saskatchewan. Historically, the federal government has relocated some departments outside the National Capital Region on an ad hoc basis, but not as part of a comprehensive national strategy, such as locating Canada's Water Agency headquarters

in Winnipeg (The Conversation - Canada 2021).

In the United States, unions are concerned about former President Trump's agenda announcement to relocate over 100,000 public servants away from Washington, D.C., should he win the 47th Presidential Election (Targeted News Service 2024). The U.S. proposal appears to be politically motivated and based on distrust of public sector employees in Washington, rather than focused on regional development or place-based policies.

Table 2. Non-exhaustive list of decentralization programs since the 1960s

Country	Sending	Receiving	Objective	Period	N. of Jobs Relocated
Completed Relocations					
France	Paris	Various regions, mainly West and Southwest	Combat "Paris and the desert français"	1960-1991	25,350
UK	London	Rest of UK	Cost savings	1963-72	22,525
UK	London	Rest of UK	Hardman recommendations	1973-88	11,636
UK	London	Rest of UK		1989-93	13,979 4,963 (new)
France	Paris	Various regions (focus on major metros like Lyon, Lille)	Regional competitiveness, state modernization	1992-1999	17,260
Germany	Bonn	Eastern Germany	Reunification and Distributing public agencies between West and East	1992	Unknown
Norway	Oslo	Various regions including Bergen, Tromsø, Tjeldsund	Regional development, spread competence nationwide	2003-2006	1,600
UK	London	Rest of UK	Lyon's Review	2004-10	25,420
Sweden	Stockholm	Northern inland	Regional development	2004-2019	4,000
South Korea	Seoul metropolitan area	Various regions	Regional development	2011-2018	52,808
Denmark	Copenhagen	Various parts of Denmark	Decentralization	2015-2018	8,000

Country	Sending	Receiving	Objective	Period	N. of Jobs Relocated
Ongoing Relocations					
Germany	Mainly Munich	Inland areas in Bavaria	Regional development	2015-2025	3,000
Austria	Vienna	Rural areas	Regional development	2017-2027	3,500
France	Paris	Medium-sized and rural areas	Decentralization, regional development	2019-2026	6,000
UK	London	Rest of UK	Places for Growth Programme	2019-2030	22,000
Germany	Federal public jobs	Coal mining regions	Support energy transition	2021-2028	5,000
Mexico	Mexico City	Various regions	Regional development	2023-	Unknown
Zimbabwe	Matabeleland North	Lupane	Service provision	2024-	Unknown
Quebec	Urban areas	Regions	Regional development	2021-2028	5,000
Norway	Oslo	Less central regions (Northern Norway, Finnmark)	Regional development	2023-	635-1,800
Proposed Relocations					
US	Washington DC	Various regions	Political redistribution	2025-	100,000
Liberia	Central Government	Various regions	Service provision	TBD	Unknown
Sierra Leone	Central Government	Local governments	Service provision	TBD	Unknown
Canada	Ottawa	Various regions	Regional development	TBD	Unknown

3 Literature Review

The literature on public employment reallocation has evolved significantly. While theoretical models and studies examining decennial changes in the national public sector predominantly predict a crowding-out effect, empirical investigations into specific relocation programs targeting particular areas have identified crowding-in effects, particularly within the services sector. This chapter aims to elucidate these developments in the literature. Initially, I delineate the spatial general equilibrium framework and extensions employed to describe public employment reallocations. Subsequently, I delve into the empirical literature. I begin by interpreting the empirical studies with regard to the spatial scope of the public sector industries under examination. I then juxtapose theoretical predictions with empirical findings concerning determinants of the multiplier effect's magnitude. Lastly, I consolidate findings on how public employment impacts female labor market outcomes.

3.1 Theoretical Framework

The literature on public employment reallocation employs two-sector spatial general equilibrium models characterized by a large number of cities and monopolistic competition of firms in the private sector based on Helpman (1998) in Pines (1998)). Land is variably modeled either as a housing market contingent on labor, with its revenue subject to lump sum redistribution (Becker et al. 2021), or as a fixed quantity of land, as observed in Moretti (2010) and adapted by Faggio (2019). Trade costs between cities are incorporated through iceberg transport costs. The models assume homogenous workers who supply exactly one unit of labor irrespective of wage levels, experience no disutility from labor supply, and can move across sectors within, and across cities. Unemployment is not explicitly modeled.

The private sector is divided into a traded sector, where goods prices are determined at the national level, and a non-traded sector, where goods prices are determined locally. The public sector produces non-traded public goods consumed locally. The relocation is examined as an exogenous influx of public sector workers to the receiving location.

This influx leads to a higher local demand for non-traded goods like local services (hairdressers, bakeries, etc.), and a higher local demand for traded goods like manufactured goods that are also sold outside the receiving region (e.g., cars). The additional local demand for non-traded goods increases local goods prices and consequently local employment in that sector. The additional local demand for traded goods might increase wages but is not strong enough to affect prices for traded goods determined nationally. New residents drive up local housing prices and rents, leading to higher costs for local businesses in the traded sector. Facing higher local costs, firms can't compete at national prices and exit the traded market, decreasing local traded employment. Overall, the model results in a pitch between a positive shock to non-traded jobs leading to an increase in private employment and a long-term general equilibrium effect on traded jobs through higher costs leading to a decrease in private employment.

Various extensions refine this canonical model within the literature. Faggio (ibid.) posits

an extended framework incorporating intra-city areas to align with her empirical data's granularity at census output areas. Furthermore, she advocates modeling public sector-produced goods as traded services rather than local public goods. This approach appears suitable for examining targeted relocation programs such as the Lyons Review in the UK (Faggio 2019), South Korea's relocation initiative (Lee et al. 2024), or capital relocations in Germany (Becker et al. 2021; Faggio, Schluter, et al. 2022) and Brazil (Quistorff 2015). However, it proves inadequate for analyzing general public sector expansions or contractions between censuses studied by Faggio and H. Overman (2014), Senftleben-König (2014), and Auricchio et al. (2020). Jofre-Monseny et al. (2020) introduce an intricate labor market model encompassing unemployment through search-and-matching mechanisms.

Concurrently, Auricchio et al. (2020) alongside Becker et al. (2021) incorporate amenity and productivity spillovers between public and private sectors into their models; Auricchio et al. additionally factor in mobility costs. The enhancements propose revisions to initial hypotheses, indicating that adverse general equilibrium effects on the traded sector may be alleviated by amenity and productivity spillovers between public and private sectors. Specifically, if the public sector enhances amenities or boosts local productivity—potentially through knowledge spillovers—employment in the traded sector might also rise via relocations. Faggio (2019) briefly references agglomeration effects akin to those discussed by Moretti (2010), suggesting that these could be influential. Given that she models the good produced by the public sector as a traded service and not a non-traded public good, it could positively impact the broader traded sector through such agglomeration effects. A pertinent example is the relocation of the Bavarian Statistical Office to a smaller locality within Bavaria, which subsequently attracted economic consulting firms reliant on their data.

3.2 Empirical Evidence

3.2.1 National Changes vs. Place-Based Policies

The empirical literature provides mixed evidence regarding the hypotheses derived from the theoretical framework presented earlier. Findings vary based on the specific segment of the public sector under examination in a given study. Faggio and H. Overman (2014), Senftleben-König (2014), and Auricchio et al. (2020) investigate changes within the national public sector across different census periods. In stark contrast, Jofre-Monseny et al. (2020), Faggio (2019), and Lee et al. (2024) focus on the relocation of individual agencies selected for targeted relocation programs that fit the previous definition of place-based policies. Additional studies, such as for example the one conducted by Chirakijja (2023), examine the impact of employment shifts in public security agencies, including prison closures or military base shutdowns, as well as the influence of universities on local labor markets.

In the empirical literature, studies measure the effect of public employment reallocation using the multiplier effect. The multiplier effect quantifies the number of additional jobs generated in the private sector per one additional public job. Furthermore, these studies

distinguish between multipliers in traded and non-traded industries, consistent with spatial general equilibrium models. The traded industry is proxied by the manufacturing sector, while the non-traded industry is predominantly proxied by the services sector. However, there are operationalization issues that need to be considered. In most of the literature, non-random and discretionary decisions are made in defining traded and non-traded sectors. Typically, manufacturing is classified as a traded sector, whereas services are classified as a non-traded sector; however, business services are often exported. Faggio and H. Overman (2014) and Senftleben-König (2014) are notable exceptions that address this classification issue. Faggio and H. Overman (2014) leverage insights from Jensen et al. (2009) from the offshoring literature to identify service activities potentially exposed to international trade. Senftleben-König (2014), on the other hand, follows Dustmann et al. (2014) by classifying sectors based on their market's geographical range: industries with export volumes below the 25th percentile of 1995's export volume distribution are designated as non-tradables, whereas those above this threshold are classified as tradable.

The underlying premise of the multiplier is that relocations not only create a relocated job but also stimulate further job creation within the local economy through increased local demand, as previously explained. Table 3 provides a chronological summary of multipliers for total private employment, traded employment, and non-traded employment found in recent studies.

The literature on the impact of changes in the size of the national public sector between censuses employs a shift-share instrumental variable (IV) approach, with notable contributions from Faggio and H. Overman (2014), Senftleben-König (2014), and Auricchio et al. (2020). Faggio and H. Overman (2014) examine the expansion of the UK public sector, particularly in health and education, while Senftleben-König (2014) and Auricchio et al. (2020) investigate contractions in Germany and Italy due to austerity measures. Each study defines the public sector differently. Senftleben-König (2014) includes public administration, defense, education, health, and social work. Faggio and H. Overman (2014) augment this definition by incorporating public corporations and local authorities. Conversely, Auricchio et al. (2020) exclude state-owned enterprises from their analysis. For a detailed exposition of the public sector definitions used in each study, see Appendix B.

This strand of the literature predominantly employs a shift-share instrument, as applied in Card (2009), to examine the impact of immigration on US cities. Faggio and H. Overman (2014) adapted this methodology to investigate the reallocation of public employment. Their approach utilizes changes in private employment, rather than total employment, as the dependent variable to ensure that public employment does not appear on both sides of the estimating equation.

The primary empirical specification in their analysis is represented by the following equation:

$$\frac{R_t - R_s}{E_s} = \alpha + \beta \frac{B_t - B_s}{E_s} + \gamma X + \epsilon \tag{1}$$

where $\frac{R_t - R_s}{E_s}$ denotes the contribution of private sector employment to overall em-

ployment growth between periods s and t. $\frac{B_t - B_s}{E_s}$ represents the contribution of public sector employment to overall employment growth between periods s and t. X is a vector comprising control variables. ϵ is the error term.

The coefficient β can be directly interpreted as the multiplier. The paper employs a shift-share instrument for $\frac{B_t - B_s}{E_s}$, calculated as:

$$\frac{B_s}{E_s} \times \frac{B_t^{NAT} - B_s^{NAT}}{B_s^{NAT}} \tag{2}$$

where $\frac{B_s}{E_s}$ indicates the initial share of public sector employment in the local area (LA). $\frac{B_t^{NAT} - B_s^{NAT}}{B_s^{NAT}}$ reflects the overall growth rate of national public sector employment within the respective country, excluding the analyzed region.

Auricchio et al. (2020) further refine this instrument by exploiting sectoral differences within the public sector, leading to an advanced formalization.

The literature consistently finds that the addition of one public sector job results in the crowding out of more than half a job in the private sector, particularly within the traded sector. Notably, Faggio and H. Overman (2014) are an exception, identifying a positive impact on the services sector. Common to these studies is their nationwide analysis of public employment reallocation impacts, which fails to account for local economic structure variations that may lead to differentiated effects being averaged out. For instance, while Berlin might benefit from a reduction in public sector size to bolster its growing private sector, a smaller city could benefit from an increase in public jobs to reinvigorate its labor market. Thus, the overall negative effect observed for Germany might obscure localized positive outcomes based on specific economic structures.

Auricchio et al. (2020) address this gap by examining regional differences between Northern and Southern Italy and finding a more pronounced effect in the South. However, they do not further disaggregate the results to analyze intra-regional localities within either the North or South. Additionally, Auricchio et al. (ibid.)'s focus is on public agencies providing local public goods. In their study, certain regions experienced artificial inflation of these agencies to create local employment opportunities. This factor introduces a distinct inefficiency in their setup compared to other studies that did not highlight such inefficiencies.

In contrast, analyses focusing on programs that are designed as place-based policies, and focus subsets of localities, such as provincial capitals in Spain (Jofre-Monseny et al. 2020), underdeveloped regions in the UK (Faggio 2019), and South Korea (Lee et al. 2024), identify a positive multiplier effect on private sector employment predominantly originating from the services sector. They also report a marginally negative impact on manufacturing employment, with estimates ranging from one-tenth of a job (ibid.) to 1.7 jobs (Faggio 2019) lost for every ten new public sector jobs created in the short run, with no significant effect in the long term. Appendix B provides a comprehensive breakdown of these studies, including detailed multiplier sizes. Although these studies benefit from more credible identification strategies due to their focus on singular interventions, they are limited by non-random selection of receiving locations and lack of prior knowledge regarding the geographical distribution of public sector relocations.

Research examining singular instances of capital relocations within Germany (Becker et al. 2021; Faggio, Schluter, et al. 2022) and Brazil (Quistorff 2015) reveals a net positive impact attributable to the expansion of the services sector. However, this positive effect is coupled with a contraction in manufacturing employment.

Other outcomes examined in the extant literature include the impact of public sector relocations on unemployment and population dynamics. However, these outcomes receive considerably less emphasis compared to the aforementioned multiplier effects. Specifically, only Jofre-Monseny et al. (2020) and Auricchio et al. (2020) investigate the ramifications for unemployment rates. While Jofre-Monseny et al. (2020) document a marginal reduction in unemployment attributable to public employment relocations, Auricchio et al. (2020) report an increase in unemployment under similar conditions. Furthermore, Jofre-Monseny et al. (2020), Auricchio et al. (2020), and Lee et al. (2024) explore the influence of public employment on population size, with all three studies consistently identifying a positive effect on population growth.

Most extant research does not engage in the analysis of local labor markets or incorporate commuting flows, primarily due to the lack of data regarding the latter. Senftleben-König (2014) investigates German districts, which can be considered analogous to local labor markets. Becker et al. (2021) focus on German urban areas, which are also comparable to local labor markets. Faggio and H. Overman (2014) examine English Local Authorities, entities that correspond to local labor markets. An additional advantage of analyzing at a more aggregated level is the enhanced capacity of such studies to capture general equilibrium effects, which typically manifest at a broader geographic scale. Auricchio et al. (2020) conduct a granular analysis at the municipal level, while Faggio (2019) examines data at the level of census output areas. Faggio, Schluter, et al. (2022) extend this research to the plant level, and Lee et al. (2024) focus on neighborhood-level data. These disaggregated studies have the advantage of capturing more localized effects that dissipate rapidly over distance. Nonetheless, the implications for the local labor market remain contentious.

3.2.2 The Determinants of the Multiplier

From a theoretical perspective, the magnitude of the multiplier in the non-traded sector versus the general equilibrium effects induced by increased wages, housing, and rent costs faced by private firms determines the size of the multiplier of public employment reallocations on private sector employment. Amenity and productivity spillovers between the public sector and the private sector moderate these general equilibrium effects as discussed in the theoretical section. However, empirical literature provides limited evidence on the role of amenity and productivity spillovers. While reduced form evidence in Becker et al. (2021) indicates potential amenity spillovers with minimal evidence for productivity spillovers from public employment in Bonn, Auricchio et al. (2020) find no evidence supporting either type of spillover.

Instead, other determinants of the size of the multiplier play a role empirically. According to Bartik (2020), the employment to population ratio plays a role for the size of the multiplier for all place-based policies, not only public employment reallocation policies.

Study	FO14	SK14	FG19	JSV20	ACDB20	BHS21	FSB22	LKK24
Method	SS IV	SS IV	DiD	C-IV	SS-IV	SCM	LD, ES	DiD
Private Emp.	/;**(-)**	**(-)**	**(+)**;/	**(+)**	**(-)**	**(+)**	(+)	**(+)**
Traded Emp.	(-)	/	/;(-)	(+)	**(-)**	(-)	(-)	/;(-)
Non-Traded Emp.	(+)	/	**(+)**	**(+)**	/	**(+)**	(+)	**(+)**

Table 3. The multiplier effect of public employment reallocation programs on total private employment, traded employment, and non-traded employment.
Result: / = No significant effect, (+) positive multiplier, (-) negative multiplier. Multipliers above 0.5 are in **bold**. The studies are ordered by year of publishing. Abbreviations: FO14 refers to Faggio and Overman 2014, SK14 refers to Senftleben-König 2014, FG19 to Faggio 2019, JSV20 to Jofre-Monseny, Silva, and Vázquez-Grenno 2019, ACDB20 to Auricchio, Ciani, Dalmazzo, and De Blasio 2019, BHS21 to Becker, Heblich, and Sturm 2021, FSB22 to Faggio, Schlüter and vom Berge 2022, and LKK24 to Lee, Ko, and Kim 2024. SS-IV refers to the shift-share instrumental variable method or Bartik instrument. C-IV refers to using a change in subnational capital status as an instrument, DiD refers to Difference-in-Differences, SCM to synthetic control method, LD to Long differences, and ES to Event Study.

Lee et al. (2024) find similar results for the case of public sector relocations in South Korea. The study suggests that the local employment multiplier is positively associated with the baseline unemployment rate. Additionally, he finds that the local employment multiplier is positively associated with the size of the public employment shock and negatively associated with how distant the treated localities are from the sending location. These findings have yet to be adequately integrated into the theoretical frameworks mentioned above. Existing spatial general equilibrium models presuppose symmetry across sending and receiving areas. However, evidence underscores the necessity for increased scrutiny regarding asymmetries between their local labor market structures.

Evidence also indicates that the specific placement of new agencies within the receiving locality significantly impacts the outcomes of relocations. Faggio (2019) reports that, while there is an overall positive employment multiplier effect, there is also a spatial concentration of these additional private sector jobs in proximity to the relocation site. Specifically, Faggio identifies a displacement effect for areas situated 1–3 kilometers away from the relocation sites. This suggests a centralization tendency post-relocation, implying that such relocations may contribute to the formation of new city centers. An alternative strategy posited by Cities Centre (2021) is to situate agencies within city centers to leverage agglomeration economies.

An intriguing observation from the literature is that, despite limited evidence on the post-departure effects on sending locations after a public agency relocates, these areas do not appear to experience significant detriments from the loss of public sector employment. Faggio (2019) identifies a marginally negative impact on sending localities in the short term; however, the magnitude of these effects is substantially smaller—by an order of

ten—compared to the positive impacts associated with an inflow of government jobs. Moreover, these negative effects dissipate entirely in the long run. Additionally, studies analyzing public employment contractions like Senftleben-König (2014) and Auricchio et al. (2020) do not find an effect of a decrease in public employment on the non-traded sector. Thinking about the theoretical models mentioned above in reverse, one would assume that decreasing the public sector would also translate into a decrease in the local demand for non-traded goods like local services. However, this does not seem to be the case.

Auricchio et al. (ibid.) propose that the relationship between public and private employment may exhibit convexity. However, I posit that local labor market structure variables, particularly employment density and unemployment rates, are likely moderators of this relationship. In regions characterized by low employment density and elevated unemployment rates, there is a deficit in labor demand through market distortions that can be addressed by the establishment of new public agencies. Conversely, in regions with high employment density and low unemployment rates—such as capital cities identified as sending locations in prior studies—a reduction in public sector labor demand could potentially reallocate resources to the private sector. This implies that strategic relocations of tradable public services, rather than arbitrary increases in local public goods provision, might have the potential to invigorate receiving areas without detrimentally impacting the sending locations. Another impact of relocation programs is that moving public employment to lagging behind regions can also make them more resilient during economic crises due to a less cyclical employment base (Lagravinese 2015).

Nevertheless, none of the papers analyzed discuss the impact of public employment reallocation on the efficiency of public good provision. Beyond public employment reallocation policies, the impact of decentralization on the quality of government services is highly context-dependent. According to a meta-study by Ghuman and Singh (2013), decentralization of public services can significantly improve service delivery when it is accompanied by financial autonomy, capacity building, and participatory governance. At the same time, challenges such as corruption, elite capture, and the specific area of service being decentralized can lead to mixed or negative outcomes. It remains uncertain, if these insights also apply to the cases of public employment reallocation and future research should take this into account.

4 The Case of Germany

In this chapter, I augment the literature by presenting an early assessment of a novel public employment reallocation program in Southern Germany. Germany presents a unique case due to its federal constitution, specifically Article 72, paragraph 2, which enshrines the objective of equal living conditions across the nation. The federal government has historically implemented various policies to achieve this goal, including federal grants and municipality tenders. Notably, in 2014, the state government of Bavaria introduced the 'Heimatstrategie' (Homeland Strategy), which seeks to relocate over 3,000 jobs and study

positions along with more than 50 agencies—equivalent to approximately 1% of all public sector employment—from Munich to economically lagging inland regions in Bavaria in a time frame from 2015 to 2025. The initiative was further expanded in 2018, with a second phase to continue until 2030. This study evaluates the policy's initial five-year period from 2015 to 2019 and examines its interim effects on local labor markets.

The Bavarian government has established a structural index to ascertain which districts qualify for relocation efforts. This index is constructed from a weighted average of five economic and demographic indicators: population forecast, unemployment rate, employment density, disposable income, and net migration of individuals aged 18 to 30. Specifically, districts are eligible if their index values are at or below 90% of the Bavarian average. Furthermore, individual municipalities that fall below the threshold may qualify for eligibility even if their encompassing district does not meet the threshold criterion. These eligible districts and municipalities collectively constitute the 'Area with Particular Need for Action' in Bavaria, qualifying them for agency allocation through the public employment reallocation initiative.

To assess the influence of the relocation policy on regional labor markets, I compare municipalities in Bavaria that received an agency and municipalities outside Bavaria, which were ineligible for the program by design. The selection of comparable municipalities in other German states is based on a matching procedure utilizing indicators from the structural index employed to identify the 'Area with Particular Need for Action' in Bavaria. Subsequently, I implemented a long differences methodology to juxtapose the treated municipalities with those never treated, using 2014 as the base year for comparison with each different event-year of the staggered treatment.

In examining the effects of the relocation program on employment and unemployment in Germany, I find a discernible impact over time. Specifically, the program increased employment shares within treated municipalities compared to untreated ones by 0.92 percentage points in 2019 and 1.3 percentage points in 2019. Before 2019, the effect was positive but not statistically significant. Furthermore, the policy appears to have reduced the unemployment share by approximately -0.18 percentage points in 2017 and -0.27 in 2018.

The empirical analysis conducted in this study substantiates the beneficial effects of reallocating public employment on local labor markets, manifesting in increased employment and population levels and diminished unemployment shares. The employment and unemployment results align closely with findings from evaluations of targeted relocation initiatives in the United Kingdom, specifically Faggio (2019), and South Korea, as detailed by Lee et al. (2024). The population results align with Jofre-Monseny et al. (2020) and Lee et al. (2024). While few studies look at what happens in sending locations, I find no detrimental effects in line with Faggio (2019).

4.1 Policy Background and Data

In 2014, the Bavarian government implemented the Homeland Strategy to enhance economic conditions in economically disadvantaged inland regions within Bavaria. This initiative, spanning from 2015 to 2025, is designed to decentralize a total of 60 state

agencies and to redistribute 2,063 public sector positions along with 930 study placements across 56 municipalities out of a total of 2,056 municipalities in Bavaria by the year 2025.

The selection criteria for agencies slated for relocation encompass several specific requirements: Agencies must engage in non-local activities with a supra-regional scope of responsibilities. The relocation pertains specifically to state authorities or affiliated entities under the jurisdiction of the Free State of Bavaria. Furthermore, it involves the transfer of lower, middle, and upper-tier authorities whose headquarters are currently situated in densely populated Bavarian areas, mainly Munich. Consequently, entities such as police stations and educational institutions are excluded from this process due to their inherently local operational focus.

The criteria for selecting a relocation site include several specific considerations. A significant majority, 70 out of 80, or 88 %, of relocation projects are directed towards areas with exceptional need, identified through a structural index. Among the remaining ten projects not situated in this selected area, six are within municipalities that have experienced base closures, known as conversion municipalities. Receiving sites are also predominantly located in medium-sized regional centers in a district called "Mittelzentren," designated in the Bavarian regional development plan. Notably, receiving locations should also not already receive funding under other policies, like the Bavarian University initiatives. Fig. 1 shows the spatial scope of the relocation by treatment status.

Table 4 shows the different costs for the relocation program up until 2022. The table delineates the financial expenditures incurred over several fiscal periods. Personnel costs, encompassing the period from 2016 to 2022, amount to 16 million Euros. They mainly consist of several different incentive payments the Bavarian state government offers employees willing to relocate. These include mobility premiums, a one-time lump sum incentive of 3,000 Euros for permanent relocation, additional variable moving costs, expense reimbursement for employees commuting between locations or staying near the new workplace during the week and being at home during the weekends, and a separation allowance to cover supplementary costs when an employee is temporarily separated from their main residence due to work relocation.

Construction expenditures total almost 75 million Euros. Renovation expenses for various locations aggregate to 3 million Euros. Moving costs are calculated from 2015 to 2021 and total 450,000 Euros. Rental costs span from 2015 through 2022 and total 18 million Euros. The cumulative financial outlay across all categories is quantified at roughly 114 million Euros (Kaltenhauser 2023). So far, the Bavarian government has paid roughly 38,000 Euros per job relocated. However, these expenses are subject to change, and some fixed costs, like construction and renovation costs, were already paid, but they will also support future jobs to be relocated.

The program's scope includes expansions within existing agencies, relocations predominantly from the state capital, Munich, to inland regions, and the formation of new regional branches of state agencies. Relocations are responsible for most job creation, accounting for 1,554 positions and 600 study places. In contrast, new branch establishments contribute an additional 380 jobs, while workforce expansions are responsible for generating 129 jobs and providing 330 academic placements. These two categories represent a lesser share of overall job growth than relocations. In addition to these

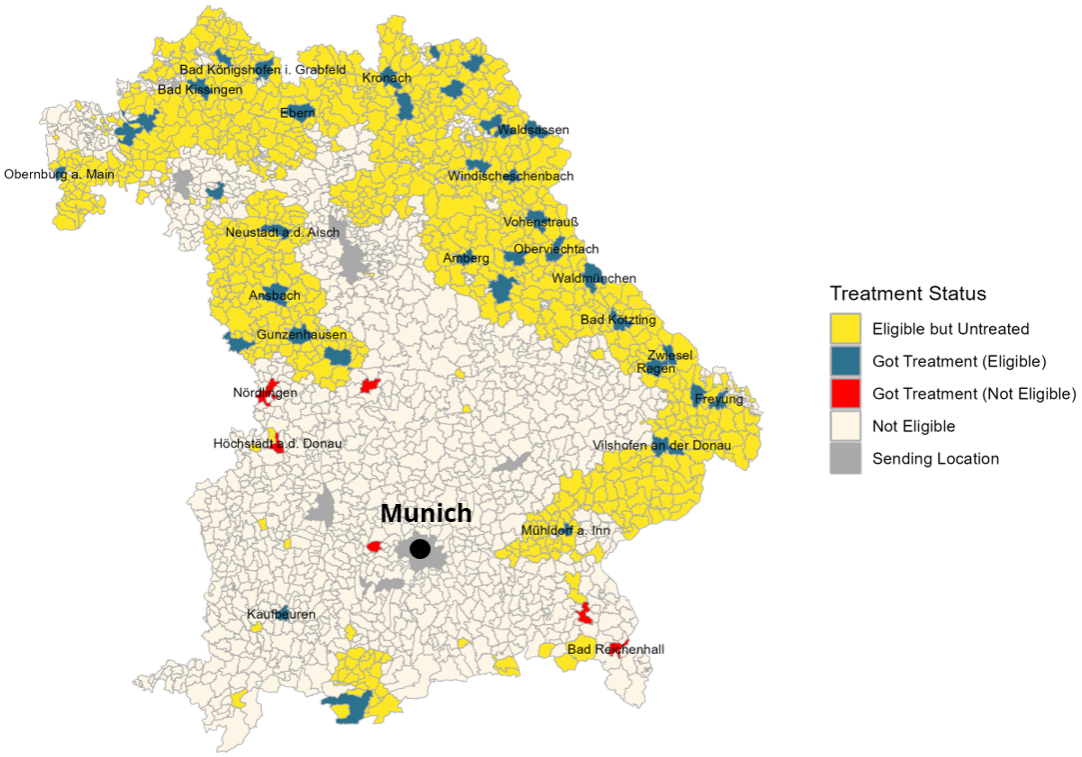

Figure 1. Spatial scope of the Bavarian relocation program my treatment status.

Cost Category	Total Cost (€)
Personnel Costs (2016-2022)	16,623,849.00
Construction Costs	74,923,320.64
Renovation Costs	3,708,003.37
Moving Costs (2015-2021)	450,713.00
Rental Costs (2015-2022)	18,188,015.00
Total	113,893,901.01

Note: This table summarizes costs across multiple years: personnel costs from 2016 to 2022, construction costs for four sites, moving costs from 2015 to 2021, and rental costs from 2015 to 2022.

Table 4. Cost Overview

measures, a supplementary program was initiated in 2016 to support the regions of Middle Franconia and Lower Bavaria specifically. Given that these relocations were focused on these specific areas rather than being based on a structural index, they are excluded from this analysis. Hence, I only analyze receiving locations that are in line quasi-experimental set-up created through the index-based selection.

In this study, the primary unit of analysis is the municipality, encompassing 7,559 German municipalities, with 2,027 located in Bavaria. Data on the relocation program were meticulously extracted from annual government reports, the BayernAtlas webpage, parliamentary inquiries by opposition parties, and various newspaper articles. For comprehensive information on data extraction procedures, refer to Freitas, Dimitria (2024). The Bavarian structural index—designed to allocate agencies based on municipal economic and demographic profiles—guides my matched sample creation for analysis. This index consolidates five metrics: population projections, unemployment rates, employment levels, income levels, and net migration of young adults aged 18–30. Diverging from the original structural index methodology, my empirical approach employs log differences from 2009 to 2014— before the policy announcement—to ensure that matched municipalities exhibit comparable trends rather than isolated annual levels as used in the original index. On average, receiving municipalities are a two-hour drive away from their corresponding sending locations, and relocations make up 1.3% of the respective local labor market of the receiving location.

Employment and unemployment numbers are derived from the Federal Employment Agency's comprehensive social security reporting system. These respective shares are created by dividing by the working age population in each municipality for each respective year. Population data is sourced from the official German Regional Statistical Database.

To make that the mechanical effect of relocating public sector worker is not entailed in the results, I subtract the number of jobs relocated per year from the employment outcomes. This strategy compensates for the lack of employment data by private vs. public sector in Germany at the municipal level. The Bavarian state public sector employs both civil servants and public employees. In Germany, civil servants are exempt from the social security system and not observed in the employment data. Hence, if all public employees affected by the relocation were civil servants, the following results would be

net of the mechanical effect of the relocations by default, and no subtraction would be needed. Compared to other German states, Bavaria has a high share of public employees with civil servant status (roughly 70%). Hence, fully subtracting the jobs relocated is a conservative approach, and the results should, therefore, be interpreted as a lower bound of the overall effect of the relocations.

4.2 Methodology

This study combines a long differences estimation with Mahalanobis distance matching to analyze the impact of public sector job relocations on local labor markets in Germany. The core idea is to compare changes in employment outcomes between municipalities that received relocated public sector jobs in Bavaria (the treatment group) and similar municipalities outside of Bavaria that did not (the control group) before and after the relocations occurred. Given the geographical proximity of treated municipalities within Bavaria, selecting controls from outside Bavaria mitigates potential spillover effects. To construct a suitable control group, I use Mahalanobis distance matching. This technique matches each treated municipality to its most similar untreated counterpart based on a set of relevant characteristics, such as population size, unemployment rate, and income levels that stem from the structural index used to determine eligibility for treatment by the Bavarian government. The Mahalanobis distance incorporates the covariance structure of these characteristics, effectively normalizing variables and down-weighting dimensions with high variability. This is sensible because small differences in low-variance dimensions could signify more meaningful disparities than equivalent differences in high-variance dimensions. The approach assumes that, in the absence of the relocations, employment trends in the treatment and control municipalities would have evolved similarly over time—the parallel trends assumption. It also assumes no anticipation effects, meaning that the upcoming relocations did not influence employment outcomes in the pre-treatment period.

Fig. 2 shows the standardized means differences and variance ratios for treated and control units before and after matching. Before matching, we see that log changes in population and unemployment shares between 2009 and 2014 were smaller for treated units compared to other municipalities in Germany[3]. At the same time, log changes in the population between 18 and 30 years, and employment shares were bigger. The variance of these controls was smaller for treated, than for control units. After matching, standardized mean differences approached 0, and the variance ratio approached 1 for all indicators, signaling high comparability between treated and control units. Fig. 3 shows the geographical distribution of treated and control municipalities. Except for one municipality, all matched municipalities lie in West Germany, which is not surprising since the East is structurally very different from the rest of the country and, therefore, also different from Bavaria, as mentioned in the literature review.

The study also employs an event study approach to investigate how the impact of public sector job relocations evolves over time. This is important because the policy was

[3]Untreated municipalities inside of Bavaria were not considered in the matching pool. Hence, they are not included in the plot.

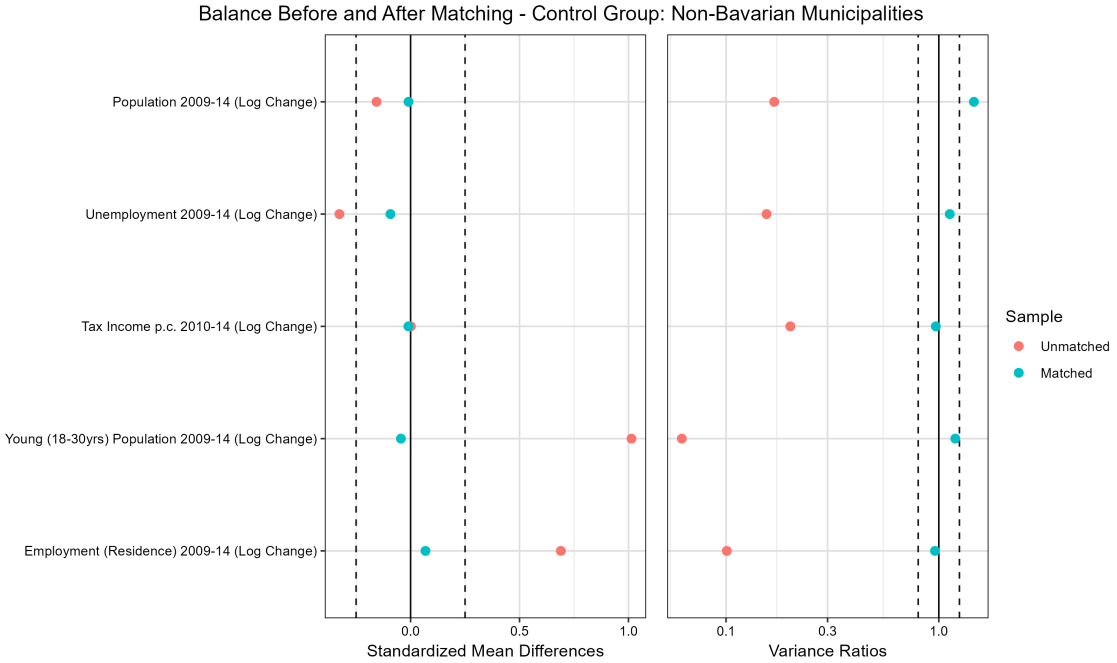

Figure 2. Matching Balance between treated municipalities in Bavaria and untreated municipalities outside of Bavaria. The left panel shows the standardized means difference for treated and control units before and after matching. The right panel shows variance ratios.

implemented gradually, with different municipalities receiving relocated jobs in different years. This staggered timing introduces methodological challenges, particularly regarding treatment time heterogeneity, a topic of active discussion in the difference-in-differences literature. A key issue arises when municipalities treated early in the policy roll-out serve as controls for later-treated municipalities. In such cases, the early-treated units can receive negative weights in the estimation, potentially biasing the results. This is not a problem for my estimation since I use "clean" control groups of municipalities outside Bavaria that were never treated during the study period. However, as an additional robustness check, I adopt the methodology proposed by Callaway and Sant'Anna (2021). In the Callaway & Sant'Anna approach, the cohort-specific average treatment effect (ATT) compares the expected change in outcomes for a given treated cohort between the pre-treatment period and a post-treatment time point relative to the corresponding change for the clean control units. Identification relies on the assumption of parallel trends holding for at least one pre-treatment period per cohort, which makes the estimator very flexible. It either calculates all effects as long differences relative to the first pre-treatment period per cohort (dynamic base period) or the first pre-treatment period across cohorts (universal base period). To enhance comparability with the study's main long difference method outlined above, I use the universal base period.

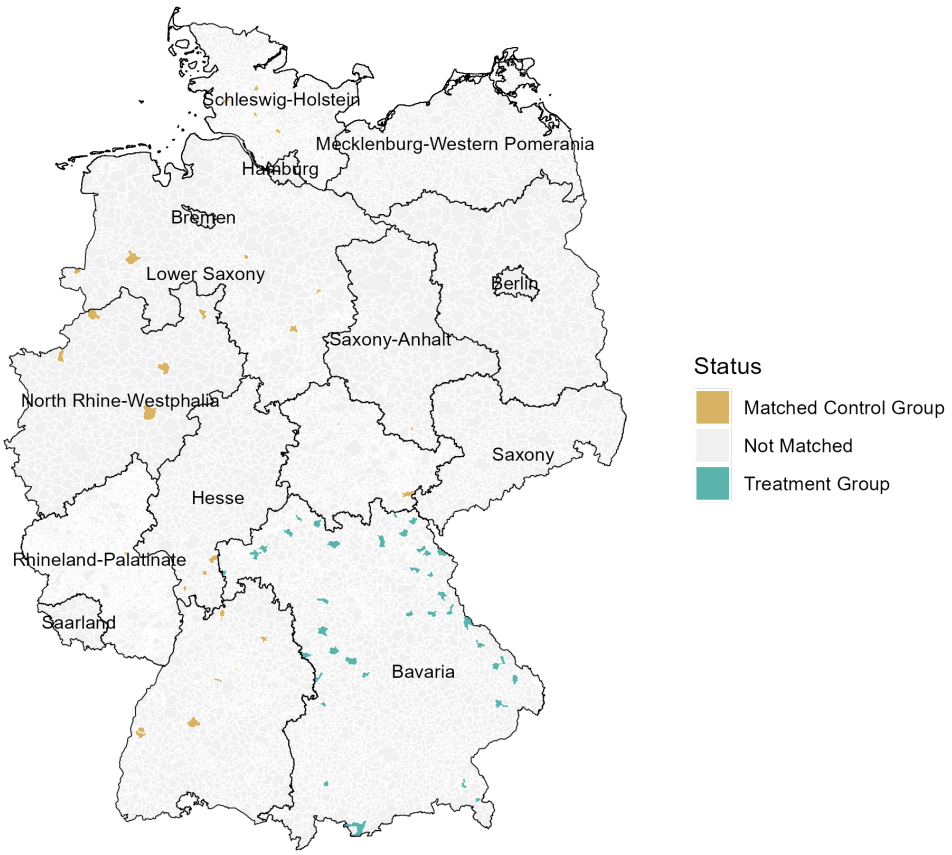

Figure 3. Map of Germany showing treated and control municipalities after Mahalanobis matching procedure.

4.3 Long Difference Results

4.3.1 Labor Market Outcomes

Table 5 presents the results of a long differences estimation comparing changes in unemployment and employment shares between 2014 and 2019 for municipalities in Bavaria that received relocated public sector jobs (the treatment group) and matched municipalities outside Bavaria (the control group). The analysis employs matching and fixed effects to control for potential confounding factors. Column 1 shows the estimated treatment effect on the log change in unemployment share between 2014 and 2019. The coefficient of -0.0682 indicates that the relocation program reduced the unemployment share in treated municipalities by approximately 6.8% relative to matched controls over this period. However, the effect is not statistically significant at conventional levels. Column 2 shows the effect as percentage point change. The unemployment share decreased by 0.20 percentage points between 2014, and 2019. However, the results are also not statistically significant.

Column 3 reports the estimated treatment effect on the log change in employment share between 2014 and 2019. The coefficient of 0.0164 suggests that the program increased the employment share in treated municipalities by about 1.6% compared to matched controls over the same period. This effect is statistically significant at the 10% level. The results in column 4 show that this increase corresponds to 0.9 percentage points.

	(1)	(2)	(3)	(4)
Treatment (Bin)	-0.0682	-0.2012	0.0164*	0.9186*
	(0.0479)	(0.1568)	(0.0088)	(0.5138)
Controls:	✓	✓	✓	✓
Observations	76	76	76	76
R^2	0.65531	0.59982	0.50961	0.52210
Within R^2	0.27036	0.28191	0.24101	0.22005
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log, and the simple differences in the employment and unemployment shares between 2014 and 2019. Column 1 shows the 2014-19 log differences in unemployment share. Column 2 shows the 2014-19 simple differences in unemployment share. The control group consists of municipalities outside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated municipality to its Mahalanobis nearest neighbor. The log 2014-19 difference in employment share between treated, and matched municipalities in column three is around 1.6 percent. The simple 2014-19 difference in employment share between treated, and matched municipalities in column four is around 0.9 percentage points.

Table 5. Long differences comparing log changes and changes in unemployment and employment shares between 2014 and 2019.

Table 6 presents the results of long differences estimations for years between 2015

and 2019 compared to 2014. The treatment effect in the first row represents the simple differences in employment shares between treated municipalities in Bavaria that received relocated public sector jobs and matched untreated municipalities outside Bavaria compared to 2014 as the base year. The estimated treatment effects are positive, indicating that the program consistently increased employment shares in treated municipalities relative to matched controls. The magnitude of the effect is strongest at the beginning of the program in 2015 (column 1) and 2016 (column 2) and in its fifth year (column 5). The effect becomes significant in 2019.

Table 7 presents the same results for simple changes in unemployment shares across all years. In 2015, unemployment shares decreased by -0.15 percentage points. However, the effect is not statistically significant at conventional levels. In 2017 and 2018, the effect is significant, with a reduction in unemployment shares by 0.21 and 0.33 percentage points, respectively.

Surprisingly, the effect on unemployment shares was positive but insignificant in 2016. I look at the results in percentages rather than percentage points to better understand this result because they might capture smaller effects. In Table 8, column 2, we see a positive effect on unemployment in 2016, which is small and only significant in percentages. Unemployment increased by 7.7 percent in treated municipalities. This result may be due to an initial influx of job-seekers into treated municipalities following the announcement of the relocation program. A second explanation would be that if a whole household relocates, other household members might have to look for a new job locally. If they are temporarily unemployed, this would explain the small positive impact on unemployment shares.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	0.6458	0.6436	0.0613	0.3710	0.9186*
	(0.4162)	(0.5366)	(0.3656)	(0.3524)	(0.5138)
Controls:	✓	✓	✓	✓	✓
Observations	76	75	76	76	76
R^2	0.64578	0.53296	0.44049	0.49327	0.52210
Within R^2	0.19655	0.09341	0.08593	0.15222	0.22005
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the simple differences in employment shares for all years from 2015 to 2020. Column 1 shows the 2014-15 simple differences in employment share. Column 2 shows the 2014-16 simple differences in employment share and so on. The control group consists of municipalities outside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated municipality to its Mahalanobis nearest neighbor. The average 2014-19 difference in employment share between treated, and matched municipalities is around 0.9 percentage points.

Table 6. Simple differences in employment shares between treated and untreated municipalities compared to 2014.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	-0.1509	0.1167	-0.2055**	-0.3303**	-0.2012
	(0.0930)	(0.0922)	(0.0946)	(0.1396)	(0.1568)
Controls:	✓	✓	✓	✓	✓
Observations	76	75	76	76	76
R^2	0.58475	0.69830	0.69355	0.63721	0.59982
Within R^2	0.22228	0.27666	0.25720	0.35899	0.28191
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log differences in unemployment shares for all years from 2015 to 2020. Column 1 shows the 2014-15 log differences in unemployment share. Column 2 shows the 2014-16 log differences in unemployment share and so on. The control group consists of municipalities outside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated municipality to its Mahalanobis nearest neighbor. The average 2014-19 difference in unemployment share between treated, and matched municipalities is around -0.2 percentage points.

Table 7. Simple differences in unemployment shares between treated and untreated municipalities compared to 2014.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	-0.0483	0.0771***	-0.0556*	-0.1184**	-0.0682
	(0.0303)	(0.0259)	(0.0328)	(0.0437)	(0.0479)
Controls:	✓	✓	✓	✓	✓
Observations	76	75	76	76	76
R^2	0.59636	0.76802	0.65349	0.62658	0.65531
Within R^2	0.17518	0.49257	0.13976	0.27633	0.27036
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log differences in unemployment shares for all years from 2015 to 2020. Column 1 shows the 2014-15 log differences in unemployment share. Column 2 shows the 2014-16 log differences in unemployment share and so on. The control group consists of municipalities outside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated municipality to its Mahalanobis nearest neighbor. The average 2014-19 difference in unemployment share between treated, and matched municipalities is around -6.8 percent.

Table 8. Log differences in unemployment shares between treated and untreated municipalities compared to 2014.

In Appendix C, I show the same results using control municipalities inside Bavaria as a control group. Overall, the results align with the main results, showing a positive impact on employment shares and a negative impact on unemployment shares. However, the coefficients are much smaller, probably due to spillover effects in the control group.

4.3.2 Population Outcomes

I repeat the long difference analysis of both the total population and the working age population at the municipal level. As displayed in table Table 9, I find that the population started increasing slightly after the treatment and reached a 1.3% increase in 2019. In 2017 and 2018, the total population increased by 1.2 and 1.6 in treated municipalities. The results are statistically significant for these years. When only considering the working age population in Table 10, I find that it increased by 1.6% in 2017, 2.1% in 2018, and then slightly less by 1.8% in 2019. This result shows that the treated municipalities attracted new citizens after the relocations started. These could be the movers from sending locations as well as other people attracted by the new jobs available in the treated municipal labor markets.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	0.0012	0.0047	0.0119*	0.0156**	0.0127
	(0.0028)	(0.0048)	(0.0059)	(0.0075)	(0.0080)
Controls:	✓	✓	✓	✓	✓
Observations	76	76	76	76	76
R^2	0.61324	0.59471	0.65472	0.70977	0.68598
Within R^2	0.08832	0.08919	0.18766	0.23909	0.23355
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log differences in total population between 2014 and 2019. Column 1 shows the 2014-15 log differences in total population. Column 2 shows the 2014-16 log differences in total population. The control group consists of municipalities outside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated locations to matched Mahalanobis nearest neighbors. The average 2014-19 difference in total population between treated, and matched municipalities is around 0.9 percent.

Table 9. Log differences in population between treated and untreated municipalities compared to 2014.

4.3.3 Sending Locations

Munich is the main sending location for the program alongside with seven other localities. In the following, I analyze the impact of the relocation program on its sending locations. Here, the treatment is the withdrawal of public sector jobs at the municipal level. Hence, I do not consider new jobs created or topped up at existing receiving locations. Due to the low number of treated units, I use a simple two-period, static difference-in-differences

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	0.0026	0.0078	0.0160*	0.0214**	0.0175*
	(0.0037)	(0.0064)	(0.0080)	(0.0088)	(0.0098)
Controls:	✓	✓	✓	✓	✓
Observations	76	75	76	76	76
R^2	0.59974	0.57962	0.62544	0.68325	0.67397
Within R^2	0.08166	0.10689	0.17604	0.26848	0.25232
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log differences in working age population between 2014 and 2019. Column 1 shows the 2014-15 log differences in working age population. Column 2 shows the 2014-16 log differences in working age population. The control group consists of municipalities outside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated locations to matched Mahalanobis nearest neighbors. The average 2014-19 difference in working age population between treated, and matched municipalities is around 1.8 percent.

Table 10. Log differences in working age population between treated and untreated municipalities compared to 2014.

estimation to gauge the effect of public employment reallocation on sending locations. Like in the main analysis, the control group units are matched through a Mahalanobis distance. Appendix D shows the respective balance plots for the matching procedure.

The employment share increases by 0.77 percentage points in sending locations as displayed in Table 11, while the unemployment share decreases by -0.59 percentage points after public sector employees relocate (Table 12). In terms of population outcomes, Table 13 shows that the working age population share increases by 1.1 percentage points in sending locations. The results should be interpreted with caution since the municipalities vary in size. For example, Munich, the third biggest city in Germany, is considered a single municipality alongside much smaller locations like Herrsching, Bavaria.

Overall, preliminary results show that the relocation did not harm but benefit the sending locations.

4.4 Event Study Results

As a robustness check, I also estimate the Callaway and Sant'Anna (2021) estimator[4]. Using this estimator, I check if treatment time heterogeneity affects the treatment effects. However, these results should be interpreted with caution. The Callaway and Sant'Anna (ibid.) estimator requires numerous observations (at least 20 as a rule of thumb) per treatment year to disaggregate the treatment effects in group-time cohorts. However, in my case, since I disregard municipalities that received relocations due to other programs

[4]Alongside with the Callaway and Sant'Anna (2021) estimator; I also show the results for canonical TWFE estimations and the Sun and Abraham (2021) estimator.

	Employment Share (Residence)		
	(1)	(2)	(3)
Post (Binary) × Treatment (Binary) = 1	5.947***	0.7748**	0.7748**
	(0.7572)	(0.3800)	(0.3860)
Controls:	✓		
Observations	192	192	192
R^2	0.19394	0.90383	0.90383
Within R^2		0.01321	0.01321
Municipality Fixed Effect		✓	✓
Year Fixed Effect		✓	✓
Mahalanobis Pair Fixed Effect			✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1
Notes: The table reports simple DiD estimates of the employment and unemployment shares for sending locations. The control group consists of municipalities outside of the state of Bavaria matched with sending municipalities in Bavaria through a Mahalanobis distance.

Table 11. Two-period difference-in-difference results for the effect of public employment reallocation on employment in sending locations.

and reduce those treated multiple times to the first treatment year, my sample consists of 38 treated municipalities. Consequently, the cohorts could be too small for the estimator.

Fig. 4 shows the event study plots for two different measures of employment shares. Employment shares continue to decrease in the first two years after the treatment and start to slowly increase after. Results show the highest increase seven years after the treatment, indicating that early treated cohorts might be driving the effect. Yet, the results are not statistically significant. However, in panel B, I create a subset of the employment shares and consider only employees who not only live but also work at the treated localities. There I find that right after the treatment, the local employment share increased for this particular group. The effect is statistically significant from three years into treatment onward. The same event study for the unemployment shares in Fig. 5 shows that unemployment started to decrease right after the relocations started in 2015.

Fig. 6 shows the event study results for population outcomes. Total population starts to increase after the treatment and peaks eight years after the policy started. The increase in working age population share is more pronounced and becomes statistically significant six years after the policy starts.

Since the policy is ongoing and will be completed in 2025, these results are only preliminary. However, in the first five years after its implementation, the policy increased employment shares, population, and working age population shares and decreased unemployment shares. The event study results show that the employment effects are sizable and pronounced for the section of the local workforce that works and lives in the treated municipalities. Together with the population increases, this could be suggestive evidence that employees either moved from the sending location or that more locals are being

	Unemployment Share		
	(1)	(2)	(3)
Post (Binary) × Treatment (Binary) = 1	-0.4625***	-0.5907***	-0.5907***
	(0.1369)	(0.1287)	(0.1307)
Controls:	✓		
Observations	192	192	192
R^2	0.75983	0.92236	0.92236
Within R^2		0.12749	0.12749
Municipality Fixed Effect		✓	✓
Year Fixed Effect		✓	✓
Mahalanobis Pair Fixed Effect			✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports simple DiD estimates of the employment and unemployment shares for sending locations. The control group consists of municipalities outside of the state of Bavaria matched with sending municipalities in Bavaria through a Mahalanobis distance.

Table 12. Two-period difference-in-difference results for the effect of public employment reallocation on unemployment in sending locations.

employed by the initiative.

4.5 Multiplier Analysis

To be added.

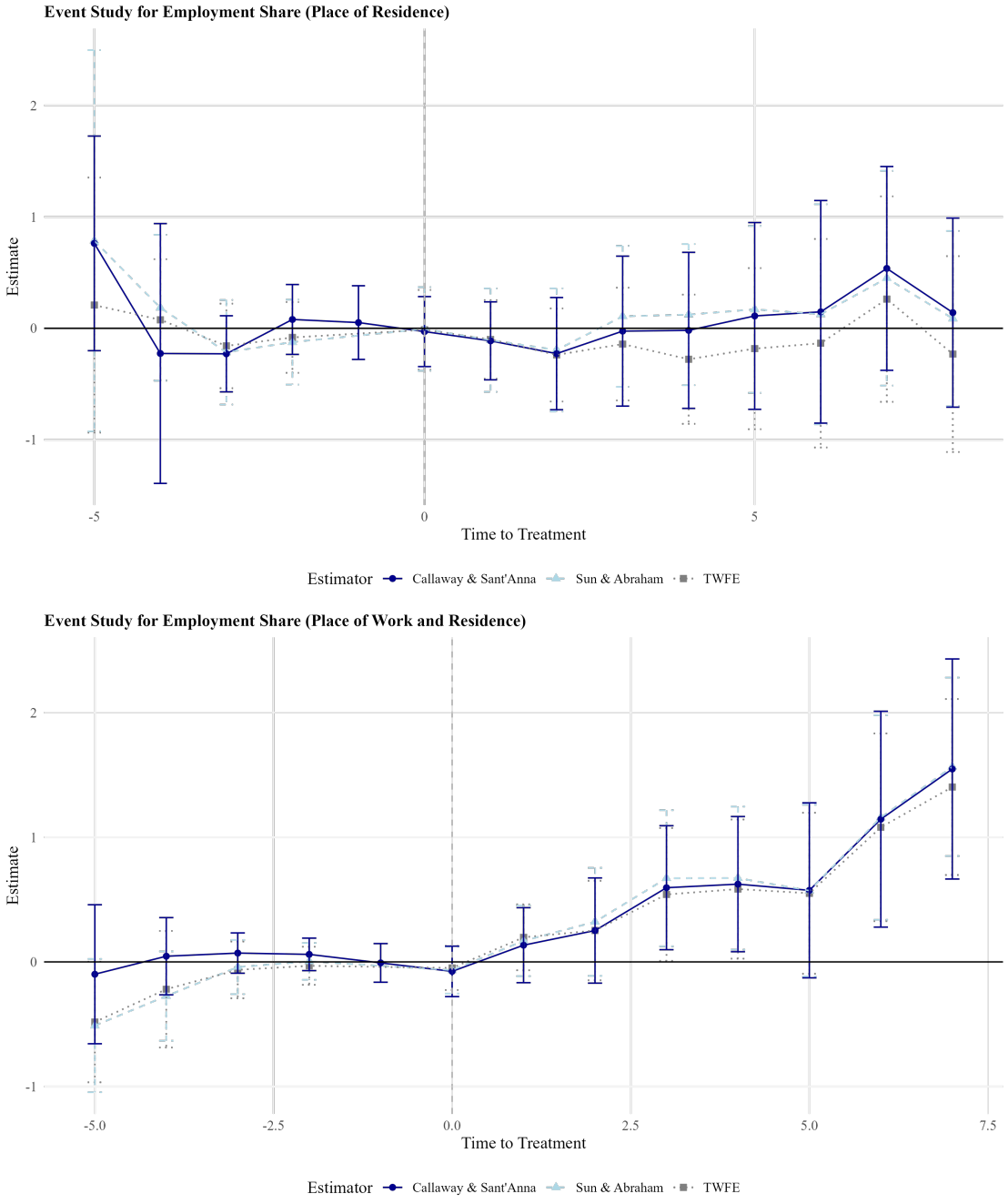

Figure 4. Callaway and Sant'Anna (2021) and Sun and Abraham (2021), and TWFE estimators for employment shares. In the first panel, I count the number of employees who live in a municipality and divide it by the working age population to determine employment shares. In the second panel, I only count employees who live and work at the same location and divide them by the working age population to determine the employment shares. Treatment starts in 2015. The base year is for all event-time comparisons is 2014.

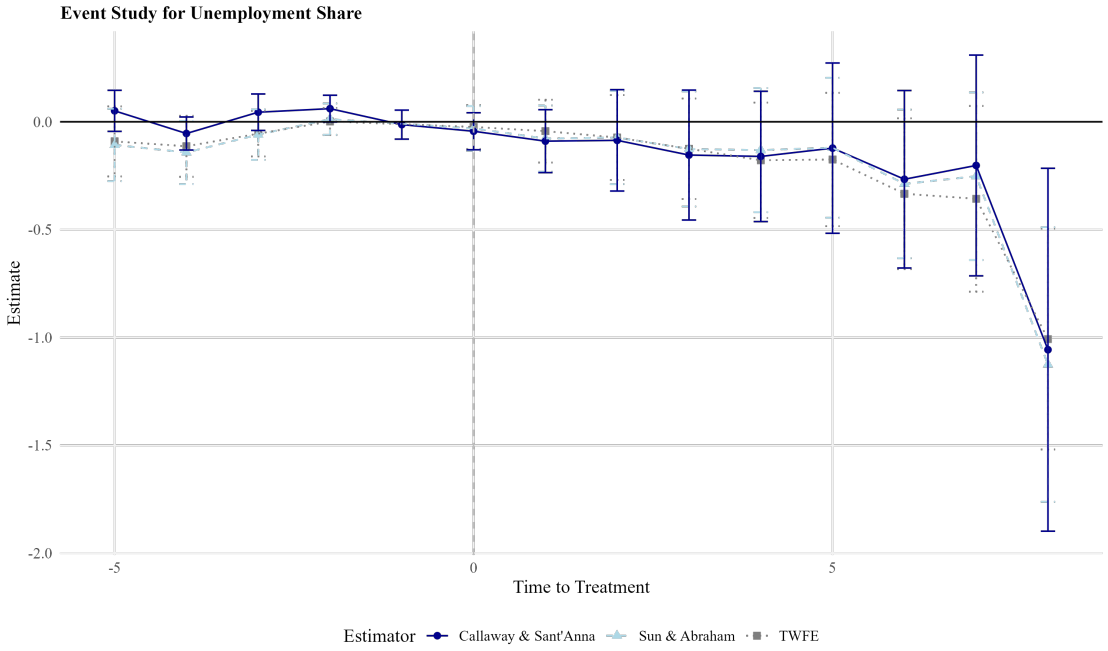

Figure 5. Callaway and Sant'Anna (2021) and Sun and Abraham (2021), and TWFE estimators for unemployment shares. To create unemployment shares at the municipal level, I count the number of unemployed in a municipality and divide it by the working age population. Treatment starts in 2015. The base year is for all event-time comparisons is 2014.

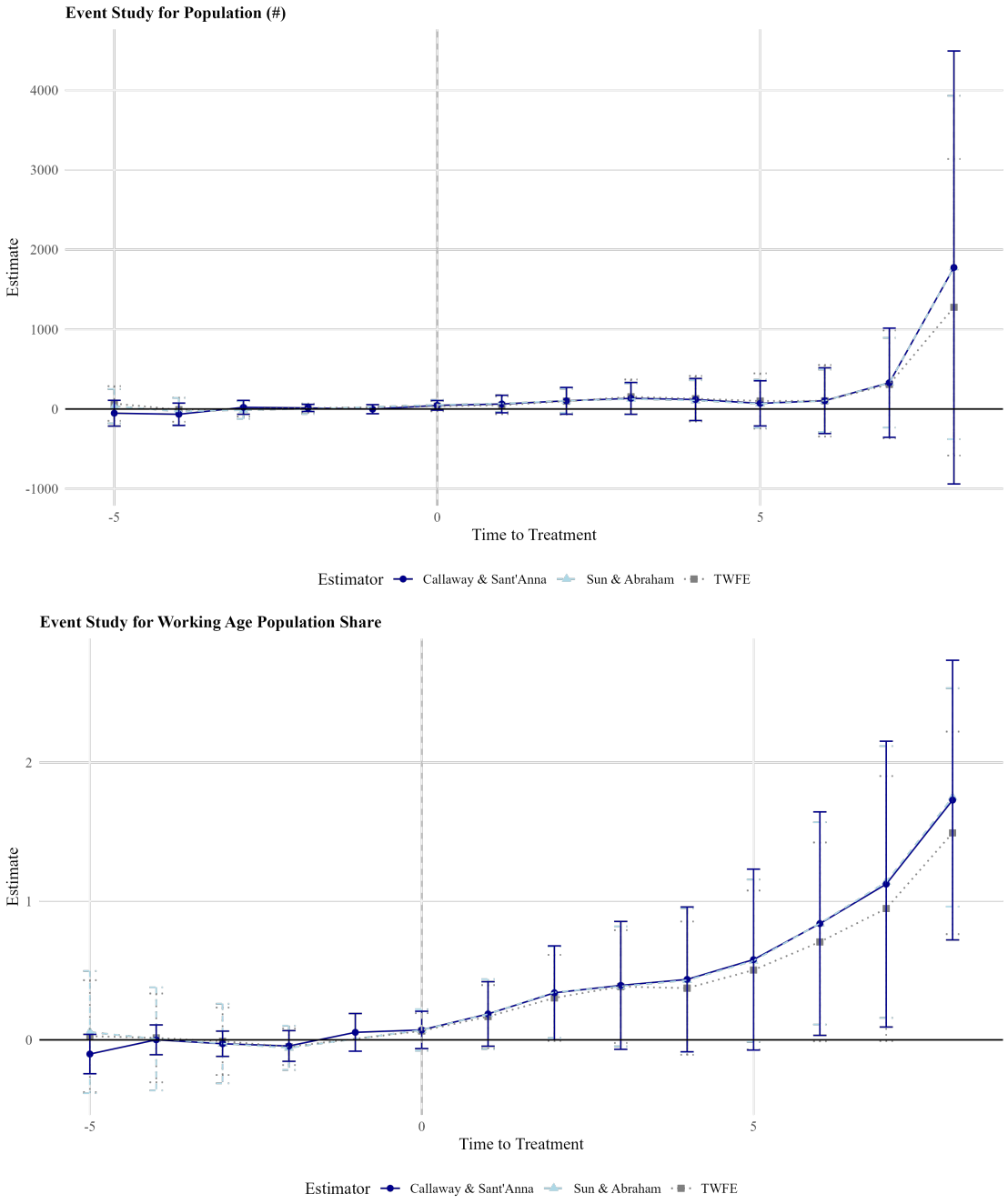

Figure 6. Callaway and Sant'Anna (2021) and Sun and Abraham (2021), and TWFE estimators estimator for population and working age population shares. The base year for all event-time comparisons is 2014.

	Working Age Population Share		
	(1)	(2)	(3)
Post (Binary) × Treatment (Binary) = 1	-1.068**	1.111***	1.111***
	(0.4422)	(0.3210)	(0.3260)
Controls:	✓		
Observations	192	192	192
R^2	0.67548	0.92396	0.92396
Within R^2		0.07336	0.07336
Municipality Fixed Effect		✓	✓
Year Fixed Effect		✓	✓
Mahalanobis Pair Fixed Effect			✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports simple DiD estimates of the working age population share for sending locations. The control group consists of municipalities outside of the state of Bavaria matched with sending municipalities in Bavaria through a Mahalanobis distance.

Table 13. Two-period difference-in-difference results for the effect of public employment reallocation on working age population shares in sending locations.

5 Conclusion

This study contributes to the expanding literature on public employment reallocation as a place-based policy for addressing persistent regional economic disparities. The analysis begins by examining the historical context of such initiatives, ranging from the establishment of purpose-built capital cities to more recent decentralization efforts in various countries. A following literature review shows that while theoretical models and studies focusing on national-level changes in public sector employment often suggest a crowding-out effect, empirical investigations of targeted relocation programs, particularly those focusing on specific localities the fulfill the definition of a place-based policy, have identified positive multiplier effects, primarily driven by growth in the services sector. The size of the multiplier effect is influenced by factors such as the employment-to-population ratio, baseline unemployment rate, size of the public employment shock, and distance between sending and receiving locations.

My subsequent empirical analysis of Germany's "Heimatstrategie 2015" contributes to this growing body of evidence. By leveraging a quasi-experimental design and a novel dataset, I evaluate the impact of public sector job relocations on local labor market and population outcomes in the first five years of the program. The approach integrates long differences estimation and matching, applied to a sample of treated municipalities within Bavaria and control municipalities outside Bavaria. The results indicate statistically significant increases in employment shares directly attributable to the policy intervention, with observed increases of 0.9 percentage points in 2019. Unemployment shares decreased significantly by 0.20 percentage points in 2017 and 0.30 percentage points in 2018.

Furthermore, the analysis reveals that treated municipalities experienced a statistically

significant increase in the total population following the policy implementation, with the effect growing from 1.2% in 2017 to 1.6% in 2018 before settling at 1.3% in 2019. The impact on the working age population was even more pronounced, with an increase of 1.6% in 2017, peaking at 2.1% in 2018, and then slightly declining to 1.8% in 2019.

Preliminary findings also suggest that the relocation program did not harm but rather benefited the sending locations, with an increase in the employment share by 0.77 percentage points, a decrease in the unemployment share by 0.59 percentage points, and an increase in the working age population share by 1.1 percentage points. However, these results should be interpreted with caution due to the varying sizes of the municipalities involved.

While the broader literature suggest that public employment reallocation can be a successful place-based policy, the impact of such relocation policies, measured through the multiplier effect, appears relatively modest compared to other place-based policies. For instance, Moretti (2010) identifies multipliers as high as 4.9 for interventions regarding high-tech industries, whereas the literature review in this chapter yields an average multiplier of 0.7 for public employment reallocations.

Looking ahead, several critical research questions remain. A comprehensive assessment of the long-term impacts of public employment reallocation, particularly on traded sectors and overall regional productivity, is crucial. Additionally, given the disproportionate representation of women in the public sector, future research should delve into the potential gendered effects of such initiatives, examining both the economic and social implications. Finally, adopting a "places vs. people" framework can provide valuable insights into the distributional effects of these policies, shedding light on whether they primarily benefit existing residents who have suffered from negative shocks in the past or attract newcomers, thereby reshaping the social and demographic fabric of the receiving regions.

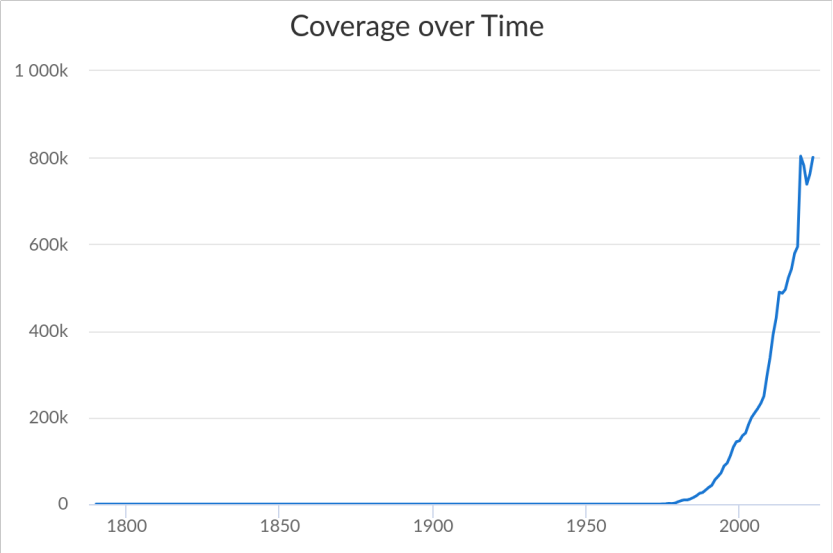

Figure 7. Coverage of news articles in Nexis database. Since 1975, decentralization programs have been increasingly covered by the press.

Appendix A: Structured News Search

I conducted a structured news search using the Nexis database, a comprehensive global database covering news and legal information from over 180 countries in 50 languages to catalog ongoing and upcoming public employment relocation programs. The search query, using boolean operators, was:

"((public AND agency) OR (public and employment) OR ministry OR (public and jobs) OR (civil and servants)) AND (relocation or decentralization or move or reallocation)"

Figure Fig. 7 shows the coverage for the query without any temporal restrictions. Since 1975, the coverage of public employment reallocation and decentralization programs has experienced a dramatic surge. For the final search, I included all geographical regions and focused on articles from the past 2 years (Jan 2022 to Jan 2024). The initial 1,285,241 results for 'Government & Public Administration' were narrowed to 'Government Departments and Authorities', excluding stock stories and obituaries. Similar articles were grouped, resulting in 131,890 relevant news items, all displayed in English via the platform's translation features. As of November 28, 2024, I reviewed and cataloged the first 10 pages of results.

Appendix B: Full Literature Table

I have enclosed the table for the full literature review of relocation papers as a PDF on the next page. The table includes the following columns:

- authors and year of publication
- region of analysis
- geographic level of analysis
- definition of the public sector used in the paper
- shock size of the policy
- period analyzed
- method used
- private employment multiplier
- traded sector multiplier
- non-traded sector multiplier
- effect on unemployment
- effect on population

Paper	Region / Relocation	Level of Analysis	Def. Of Public Employment	Shock Size	Period	Method	Private Sector Employment / Total Employment	Industry / Manufacturing / Tradable Employment	Other parts of private sector (Services) / Non-tradable Employment	Unemployment	Population
Becker et al. (2021)	DE Gov Move to Bonn after WWII	City Level	Public administration and social security administration (excludes health, education, state-owned enterprises)	21,428 jobs or ~289% (15,637 difference between treatment and control or 210%)	1925-1987 (62 yrs)	Theoretical Model (Economic Geography) Empirical Strategy (Difference-in-Differences & Synthetic Control)	0.86	- 0.19	1.05	Not analyzed	Not analyzed
Faggio and Overman (2014)	Employment changes at the English Local Authority level (UK public sector expansion in health and education)	English Local Authority	Main analysis: Public sector jobs are those in public corporations, nationalised bodies, central government and local authority. Additional Analysis: Three sectors: SIC75 (public administration & defence; compulsory social security); SIC80 (education); and SIC85 (health and social work). This classification ignores the fact that a proportion of the services in division 80 and 85 are actually provided by the private sector (e.g. private schools, hospitals)	246,400 jobs or 5.8%	2003-2007 (4 yrs)	Shift-Share IV (Relocations and Seats won by the labour party at the 1983, 1997, and 2005 elections as alternatives)	No sign. Effect / 0.08	- 0.4	0.5	No significant effec	No significant effect on working age population
-	-	-	-	-	1999 - 2007 (8 yrs)	-	- 1.0	- 0.78	No significant effect		

Faggio (2019)	UK Lyons Review	Census Output Areas	Central government employment, including government departments, non-ministerial departments, executive agencies, and executive Non-Departmental Public Bodies (NDPBs). This excludes jobs in health (NHS), schools, police forces, local authorities and Extra-Territorial Organizations and Bodies (SIC99)	25,000 jobs	2003-2007	Difference-in-Difference with Treatment Intensity Framework	1.146	No significant effect	1.152	Not analyzed	Not analyzed
	-	-	-	-	2003-2010	-	Positive, but insignificant effect	- 0.173	0.344	Not analyzed	Not analyzed
Faggio, Schlüter, vom Berge (2022)	DE Gov Move from Bonn to Berlin in 1999 (1996-2003)	Establishment / Plant Level	Public Sector employment (SIC75), foreign representations (SIC99), and partly special interest group employment as in political parties, trade unions, industry lobbying groups and consumer interest groups (SIC91)	15,000 government-related positions (Inc. Other policies: net gain of about 18,000 jobs for Berlin)	1998-2002	Long-Differences, Dynamic estimation, Event Study	1.33-1.37 **(Including** the public job)	No significant effect	1.33-1.37 **(Including** the public job)	Not analyzed	Not analyzed
Jofre-Monseny et al. (2020)	Spanish Public Sector Growth after Franco's death	City Level	Public administration (including police and military forces), education, and health	1.8 million public sector workers (133%)	1980-2001 (21 yrs)	Spatial Equilibrium Model with Search and Matching (Simulation of Increase in public employment by 50%)	1.6 (**Including** the public job!) 0.6 Pure Multiplier	-0.420	0.791	**-**0.4 percentage points.	Active: 1.576
-	-	-	-	-	-	2SLS (Capital City Status)	1.8 (**Including** the public job!) 0.8 Pure Multiplier	0.029	0.866	No significant effect	Active: 2.3 Working-age: 2.829 Total: 3.733

Auricchio et. al. (2020)	Public Employment **contraction** due to decrease in the replacement of retirees in Italy	Municipal Level	Public institutions including administration of the state and the economic and social policy of the community, education, health services, excluding state-owned enterprises, NGOs	-11%	2001-2011 (10 yrs)	Spatial Model with Mobility Costs Shift-Share Instrument	0.7	0.586	No significant effect	-0.175	-0.903 (Working age population)
Lee et. al. (2024)	Public sector entity relocations in South Korea for equitable growth across regions.	Neighborhood Level	Public sector employment positions (government entities, excluding military and police)	52,808 public-sector employees relocated in total, on average ~2900-900 = ~2000 jobs on average or 222% on average	2011-2017 (6 yrs)	Difference-in-Difference with Treatment Intensity Framework and Event Study Model.	0.99	-0.01	0.96	Not analyzed	3.47 (2.08 same city 0.74 non-SMA 0.65 SMA)
Senftleben-König (2014)	DE, not specific policy, but public sector **contraction** period	District Level	Pubic Administration and defense, education, health and social work. Regulated industries that provide public goods also excluded like mining and quarrying, electricity, gas, and water supply, transport and communication, extraterritorial organizations and bodies.	Unknown. -1% contribution to overall job growth 03-07	2003-2007	Bartik Shift-Share Instrument	0.738 (Statistical Office data) 0.528 (SIAB IAB data)	0.560	No significant effect	No significant effect	No significant effect on labor force or net migration

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	0.3902	0.4543	0.2750	0.2829	0.0243
	(0.2792)	(0.3403)	(0.4276)	(0.3959)	(0.4416)
Controls:	✓	✓	✓	✓	✓
Observations	76	76	76	76	76
R^2	0.53906	0.56875	0.45996	0.53313	0.51913
Within R^2	0.08438	0.16912	0.08541	0.11516	0.07164
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the simple differences in employment shares for all years from 2015 to 2020. Column 1 shows the 2014-15 simple differences in employment share. Column 2 shows the 2014-16 simple differences in employment share and so on. The control group consists of municipalities inside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated municipality to its Mahalanobis nearest neighbor.

Table 14. Robustness Check for employment results using Bavarian municipalities as control municipalities.

Appendix C: Robustness checks with Municipalities inside Bavaria as control group.

In the following, I show the long differences results comparing treated municipalities in Bavaria to untreated municipalities in Bavaria as a control group.

The employment effects are generally smaller than those I found using the out-of-state municipalities as controls. Column 1 shows that employment shares increased by 0.4 percentage points after the treatment started in 2015. However, the results are not statistically significant.

Unemployment decreases after the policy is implemented. The effect is negative and significant for 2017 onward. In 2019, unemployment decreased by 0.3 percentage points.

In terms of the total population, I find that population started increasing slightly after the treatment and reached a 0.9% increase in 2019. In 2016, and 2017, total population increased by 0.7 and 1 % in treated municipalities. The results are statistically significant for these years.

Overall, the labor results align with the main results, showing a positive impact on employment shares and a negative impact on unemployment shares. However, if a spillover effect impacts the control municipalities, the effect would be underestimated compared to the true effect of the policy. I find suggestive evidence that this is the case since the coefficients for the employment results are much smaller for this control group than the ones in the main results.

Appendix D: Matching for sending locations.

Fig. 8 shows balance plots for the indicators I use for the Mahalanobis matching to find a control group for treated sending locations.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	-0.0980	-0.0932	-0.1734*	-0.3019***	-0.2908**
	(0.0899)	(0.0983)	(0.0897)	(0.0979)	(0.1106)
Controls:	✓	✓	✓	✓	✓
Observations	76	76	76	76	76
R^2	0.53736	0.58365	0.68806	0.67841	0.60707
Within R^2	0.10990	0.14359	0.32999	0.35801	0.24953
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the simple differences in unemployment shares for all years from 2015 to 2020. Column 1 shows the 2014-15 simple differences in unemployment share. Column 2 shows the 2014-16 simple differences in unemployment share and so on. The control group consists of municipalities inside of the state of Bavaria matched with treated municipalities in Bavaria through a Mahalanobis distance. I compare the treated municipality to its Mahalanobis nearest neighbor.

Table 15. Robustness Check for unemployment results using Bavarian municipalities as control municipalities.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	0.0033	0.0076**	0.0103*	0.0097	0.0095
	(0.0026)	(0.0034)	(0.0054)	(0.0069)	(0.0078)
Controls:	✓	✓	✓	✓	✓
Observations	76	76	76	76	76
R^2	0.64695	0.66852	0.66129	0.67484	0.70966
Within R^2	0.07340	0.21783	0.23168	0.24875	0.22126
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log differences in total population between 2014 and 2019. Column 1 shows the 2014-15 log differences in total population. Column 2 shows the 2014-16 log differences in total population. The control group consists of municipalities within the state of Bavaria matched with treated municipalities through a Mahalanobis distance. I compare the treated locations to matched Mahalanobis nearest neighbors.

Table 16. Robustness Check for population results using Bavarian municipalities as control municipalities.

	(1)	(2)	(3)	(4)	(5)
Treatment (Bin)	0.0027	0.0075*	0.0105	0.0111	0.0149
	(0.0031)	(0.0041)	(0.0064)	(0.0083)	(0.0091)
Controls:	✓	✓	✓	✓	✓
Observations	76	76	76	76	76
R^2	0.63082	0.69660	0.68915	0.69285	0.74585
Within R^2	0.07998	0.19086	0.19880	0.19749	0.20461
Mahalanobis Pair Fixed Effect	✓	✓	✓	✓	✓

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Notes: The table reports the log differences in working age population between 2014 and 2019. Column 1 shows the 2014-15 log differences in working age population. Column 2 shows the 2014-16 log differences in working age population. The control group consists of municipalities within the state of Bavaria matched with treated municipalities through a Mahalanobis distance. I compare the treated locations to matched Mahalanobis nearest neighbors.

Table 17. Robustness Check for working age population results using Bavarian municipalities as control municipalities.

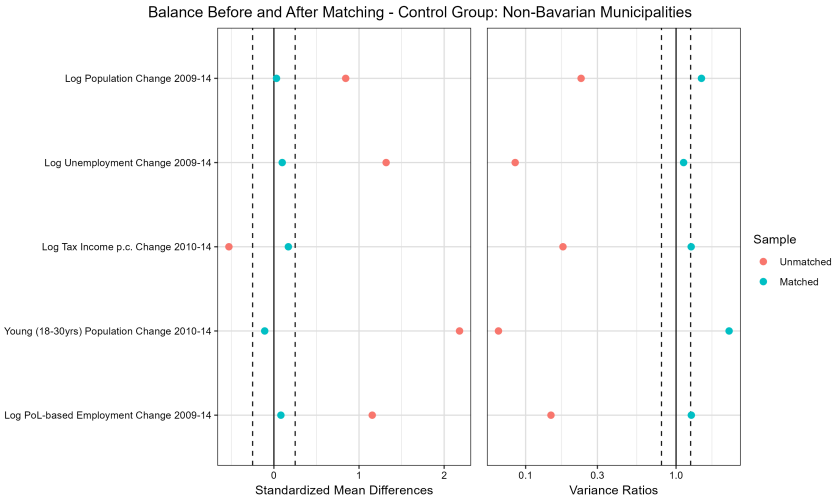

Figure 8. Balance plot for sending location matching.

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