

## RIETI Discussion Paper Series 21-E-085

# The Spillover Effects of Compact City Policy on Incumbent Retailers: Evidence from Toyama City

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The Research Institute of Economy, Trade and Industry https://www.rieti.go.jp/en/

### The spillover effects of compact city policy on incumbent retailers: Evidence from Toyama City<sup>\*</sup>

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#### Abstract

The compact city policy of Toyama City, Japan, aims to encourage density in both the city center and suburban hubs linked by public transport systems. The policy framework relates to the place-based policy, which targets geographic underperforming zones. Several town developments projected by this policy, including the development of housing, public and commercial facilities, and public transport systems, are conducted to increase the attractiveness of the target zones. Retail revitalization is then expected as a spillover effect through increasing market size. Using a difference-in-difference matching estimation with establishment-level panel data, this paper evaluates the policy impact on incumbent retailers located in the target zones, corresponding to the treatment group. The empirical results demonstrate that while the policy effects are not observed in the short run, the policy has a positive impact on both inputs and outputs for incumbent retailers in the long run. The existing policy framework, however, does not generate positive spillover effects on incumbent retailer productivity.

JEL classification: L81, R11, R58

**Keywords:** Place-based policies; Program evaluation; Compact city; Urban sprawl; Retail productivity

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<sup>\*</sup> This research was conducted under the project "An Empirical Study on Compact City: Evaluating place-based policies in Japan" at Research Institute of Economy, Trade and Industry (RIETI). The previous version of this paper was circulated under the title "Does Compact City Policy Benefit Incumbent Retailers? Evidence from Toyama City."

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#### 1 Introduction

Devoted proponents of compact cities have increased dramatically among policymakers in recent decades. Motorization, in conjunction with the development of a network of radial roads, generates the spatial dispersion of population within a city (Glaeser and Kahn, 2004). Such low density is less efficient when served by public transportation, leading to further automobile-dependent cities. These cities also favor suburban shopping malls, thereby giving rise to the hollowing out of shopping streets located in the city center or in nearby public transport stations/stops. To address this, compact city policies encourage high-density, mixed-use, and transport-oriented development (TOD) in target areas with public and private investment supported through subsidies, which can make the areas more attractive to potential consumers. Additional local footfall can increase the density of shoppers in the target zones and, accordingly, help raise the productivity of incumbent retailers likely to suffer from external shopping malls. To shed light on this issue, this paper estimates the effect of compact city policy on incumbent retail productivity using a quasi-experimental design in Japan.

Toyama City, the capital of Toyama Prefecture in Japan, provides an important context in which to gauge the impact of compact city policy. As is common in most medium-sized regional cities, Toyama experienced automobile-dependent dispersed urbanization flowing from six passenger vehicles for every ten inhabitants in the city in 2005.<sup>1</sup> As one consequence, the population density of Toyama's most densely inhabited district was the lowest of any Japanese prefecture capital with just 40.3 inhabitants per hectare. The share of retail sales in the central district of Toyama was 35.8% in 1997, but this decreased to 18.7% by 2007, possibly because large-scale commercial facilities newly entering the market are located in the suburbs.<sup>2</sup> These statistics well capture the notoriously sprawling feature of Toyama. In response, Toyama has promoted a compact city strategy, which attempts to convert its spatial structure to greater residential concentration in the city center as well as in areas along the public transport axes.

<sup>&</sup>lt;sup>1</sup>Calculated by the authors from the 2008 Toyama Shi Tokeisho. https://www.city.toyama.toyama.jp/ kikakukanribu/johotokeika/tokei/tokeisho/tokeishoh20.html (accessed on July 7, 2021).

<sup>&</sup>lt;sup>2</sup>Figures for residential density and retail sales from the Second Round of the Toyama Basic Plan for City Center Revitalization. Toyama City, April 2012. https://www.city.toyama.toyama.jp/data/open/cnt/3/2332/1/dai2kichukatukeikaku.pdf (accessed July 7, 2021).

The latter spatial target zones are unique in Japan. This is because many train and tram tracks have remained in the city, whereas they have been abandoned in many other local cities. As a result, Toyama received the country's first authorization for its Basic Plan for City Center Revitalization from the central government on February 8, 2007, and was selected by the OECD (2012) as a notable case study of compact city policies.<sup>3</sup>

This paper relates to a growing literature on urban economics that has conducted place-based policy evaluation (Neumark and Simpson, 2015). In this, policymakers designate a geographical area, and several programs are implemented intensively within this area, with the literature often considering tax incentives for individual firms located in specific underperforming districts known as Enterprise/Empowerment Zones (Busso et al., 2013; Givord et al., 2013; Wang, 2013). For their part, Toyama's compact city policies do not directly provide tax or subsidy incentives to individual firms. Instead, they offer subsidy incentives for community development in the target zones. For example, the city government has promoted the development of housing, public and commercial facilities, and public transport systems to increase the attractiveness of the target areas. If households move to these target areas or acquire housing, they can then receive the subsidies. These projects also attract travelers from outside areas. The spatially targeted policies of Toyama City are, therefore, expected to have a positive spillover effect on incumbent retailers through increasing market size.

A critical problem in evaluating place-based programs is that the areas affected are not randomly selected in accordance with given criteria. To overcome this selection bias, Busso et al. (2013), Givord et al. (2013), and Wang (2013) selected areas that adopted programs later as applicants for the control group. They then used matching methods to select a reasonable counterfactual for any of the treated areas based on area level covariates.<sup>4</sup> However, the average treatment effect on the treated (ATT) can still suffer from systematic differences between the areas. For example, time-invariant unobservable factors such as the motivation of firms in the

<sup>&</sup>lt;sup>3</sup>The others are Melbourne (Australia), Vancouver (Canada), Paris (France), and Portland (US). Among these, Toyama is closest in population size to Portland.

<sup>&</sup>lt;sup>4</sup>We may consider that a regression discontinuity design is valid for drawing causal inferences because a geographic boundary can clearly split areas into the treated and the control. However, the impact of place-based programs is likely to involve leakage to areas with a common boundary (Givord et al., 2013; Hanson and Rohlin, 2013).

area may affect both treatment status and outcomes. Fortunately, a difference-in-differences (DID) estimator can correct for this selection bias on time-invariant unobservable heterogeneity (Heckman et al., 1997; Smith & Todd, 2005). For this reason, the aforementioned studies have integrated a matching method with a DID estimator to compare the conditional before-after outcomes of the earlier treated with those of the matched later treated.

Our quasi-experimental design follows Busso et al. (2013), Givord et al. (2013), and Wang (2013). However, compared with these studies, the present study involves far fewer treated areas because we focus on only one city, namely, Toyama. To address this, we apply a matching method based on individual establishment-level characteristics rather than area-level statistics. That is, the individual establishments are considered as the unit of observation, and this enables us to ensure a large sample size for both the treatment and control groups. Our control group is selected from establishments located in cities where a Basic Plan for City Center Revitalization has been authorized about ten years after Toyama. The city center in these cities provides a rational counterfactual in that they, likewise, experienced suburban sprawl, but had not yet implemented compact city policies. We then estimate the difference in the average growth of outcomes between the treatment and the matched control groups to recognize the causal effect of compact city policy.

Compact city policies favor built public transit systems to break away from car dependence, and for this reason Toyama City designed unique spatially targeted zones along public transport routes. Like the above, we employ a DID matching estimator to compare the before–after outcomes between the existing retailers in target zones along the public transport lines in Toyama and the matched control group. One difference is that we select the control group from establishments located in cities where the Basic Plan is authorized at around the same time, but where target zones along the public transport axes were not designed. Thus, this paper also relates to the literature on TOD and its impact. Numerous empirical works have attempted to identify the economic impacts of TOD on surrounding neighborhoods. Nonetheless, the number of studies focusing on the impact on retail activities, which is a key component of mixed-use TOD, remains limited, with Schuetz (2015) and Credit (2017) as exceptions.<sup>5</sup>

 $<sup>^{5}</sup>$ Considering preintervention trends, they selected control areas from the same metropolitan area where the

Our preferred results suggest that while statistical significance is sensitive to the matching pair such that we cannot obtain strong empirical evidence, it takes a long time for compact city policy to impact both inputs and outputs for incumbent retailers. Seven years after the policy was enacted, the growth rate of floor space for existing retailers was 7.2 percentage points higher than their matched counterfactual, and after nine years, the growth rates of employment and retail sales were 8.6 and 9.9 percentage points higher, respectively. Our findings are then somewhat different from the literature on place-based policies in this sense. For instance, Busso et al. (2013) demonstrated that the urban Empowerment Zone program in the US had no significant impact on increasing employment among incumbent firms, while Givordet et al. (2013) found that place-based tax exemptions in France were not effective in fostering either business creation or employment for already existing companies, potentially because of increased competition among new entrants in the target areas. Moreover, we do not find any significant policy impact on incumbent retailers in areas along Toyama's public transport axes. Schuetz (2015) also showed that TOD has no significant impact on retail employment near rail transit stations, suggesting that consumers in automobile-dependent cities still prefer shopping by car.

We emphasize that retail revitalization in the treated areas should be captured by productivity improvements, as measured by the ratio of output (retail sales) to inputs (floor space or employees), rather than just as separate production inputs and output (Håkansson et al., 2019). However, our results indicate that the compact city policy impacts are not significantly associated with differences in the productivity growth of incumbent retailers. This leads us to conclude that the current framework of Toyama's compact city strategies does not produce significant positive spillover effects for the productivity of incumbent retailers.

The rest of the paper is organized as follows. Section 2 briefly introduces the ideas behind the compact city policies of Toyama City, Japan. Section 3 discusses the empirical method, data, and results. Finally, Section 4 presents the conclusion.

treated areas are located. Unlike Schuetz (2015) and Credit (2017), our selected counterfactuals come from outside Toyama City.

#### 2 Background

Before the 1990s, the development of large-scale retail stores in Japan was strictly coordinated by the central government to preserve local retail activity.<sup>6</sup> As a result, the Japanese retail sector was dominated by small and medium-sized retailers (Itoh, 2000). Even when cars became the dominant transport mode in regional cities, only medium-sized stores were developed along suburban highways. However, these restrictions were gradually relaxed after May 1990 in response to the Japan–US Structural Impediments Initiative.<sup>7</sup> Since then, developers have secured low-priced land on the edge of cities to construct large-scale commercial facilities with huge parking lots. One consequence is that retail activity in city centers has deteriorated substantially and the traditional shopping street has been ridiculed as a shuttered street because of highly-visible empty shops.<sup>8</sup>

To restrain further suburban sprawl, the Japanese central government enforced the following three acts relating to urban renewal in the 1990s and 2000s: the Act on the Measures by Large-Scale Retail Stores for Preservation of Living Environment (in effect from 2000), which regulates developments by considering the impact on the neighborhood environment such as noise and traffic congestion; the City Planning Act (in effect from 1968; revised in 2006) which allows local governments to prohibit the development of commercial facilities with a total floor space of 10,000 square meters or more in the suburbs; and the Act on Vitalization in City Center (in effect from 1998; revised in 2006 and 2014), which aims to reinvigorate the geographical core of cities where urban (public) facilities including commercial facilities are concentrated.

As part of its 2006 Amended Act on Vitalization in City Center, the central government newly introduced a "Selection and Concentration" objective. Within this, and to receive subsidies from the central government for this purpose, each local government must elaborate a Basic Plan for City Center Revitalization that includes the reinvigoration of its city center by

<sup>&</sup>lt;sup>6</sup>See Sadun (2015) for the impact of entry barriers against large stores on independent retailers.

 $<sup>^{7}</sup>$ Igami (2011) investigated the effects of this deregulation on existing competitors in the Tokyo supermarket industry.

<sup>&</sup>lt;sup>8</sup>Daunfeldt et al. (2020) investigated the extent to which the entry of external shopping malls in small cities in Sweden affected the productivity of incumbent firms located in the city center. The empirical results suggested that the productivity of incumbent firms fell after the establishment of new external shopping malls, but that these impacts resulted from other negative time trends such as population aging and shrinking.

creating liveliness, promoting residence, enhancing economic vitality, and upgrading the public transportation system and submitting it for certification. As of June 29, 2021, the Cabinet Office had certified 257 Basic Plans for 151 of Japan's 1,741 municipalities.<sup>9</sup> As the name suggests, the Basic Plan for City Center Revitalization focuses on the spatially targeted area in the city core, instead of targeting the entire region. Therefore, nearly all local governments that have gained authorization for their Basic Plan have attempted to form a city with a monocentric urban structure, with the projects listed in the Basic Plan conducted in only the inner-core areas.

After the Toyama Basic Plan was first authorized on February 8, 2007, Toyama City government implemented various projects for establishing convenient public transportation, creating liveliness, and promoting residence in the central area, comprising 27 projects in the first round, and more than 60 projects in the second and third rounds.<sup>10</sup> Table 1 details the key projects listed in the Toyama Basic Plan during our study period between 2007 and 2016.

Fig. 1 displays the extent to which population and commercial facilities of 10,000 square meters or more (point object) in Toyama City (the thick line) suburbanized over the decade of our analysis. A dashed line indicates existing railway and tram lines in 2005. The spatially targeted zone of the city center is surrounded by the black frame (436 hectares), while those of the public transport axes are surrounded by the gray frame. The city center includes Toyama Station and the traditional shopping streets. As shown, much of the dark-colored mesh in the central area in 1995 is converted to light-colored mesh by 2005, whereas the opposite took place in the suburbs, suggesting widescale population dispersal between 1995 and 2005. According to the Second Round of the Toyama Basic Plan for City Center Revitalization, population in the central district decreased by 11.5 percent between 1995 and 2006. Turning to commercial facilities, one (Seibu Department Store; 13,516 square meters) of four department stores disappeared from the city center zone during this time, while a mega-shopping mall (Favore; 47,360 square meters) opened in the suburbs. In addition, several large-scale retail stores, including the largest mall in

<sup>&</sup>lt;sup>9</sup>See the webpage of the Vitalization in City Center, the Cabinet Office of Japan. https://www.chisou.go.jp/ tiiki/chukatu/index.html (accessed June 29, 2021)

<sup>&</sup>lt;sup>10</sup>See Kidokoro (2008), Takami and Hatoyama (2008), OECD (2012), and Arai (2019) for further details about compact city polices in Japan and Toyama City.

the region (Aeon mall; 54,200 square meters), were established in satellite cities.<sup>11</sup> The Second Round of the Toyama Basic Plan noted that the number of retailers in the central district fell by 36.0 percent between 1994 and 2007.

Unlike other local governments, Toyama City government adopted its compact city based on a polycentric urban formation. Besides the Toyama Basic Plan, Toyama planned networks of public transportation terminating in the city center, and incorporated residential areas along the public transport axes into the target zones. The Portram, which transformed an unprofitable railway connecting the city center and the suburbs into an attractive light rail transit in 2006, is considered as a successful case for compact cities in Japan. This supplementary project seems to be rational because it is unrealistic for a sprawling city to adopt a monocentric shape. Residential areas were designed within 500 meters for railway stations or tram stops and within 300 meters for bus stops (Fig. 1). The main projects were a subsidy scheme for building/owing/renting a house in these areas.

Retailers in the city center zone could also enjoy the benefits of the Hokuriku Shinkansen (high-speed bullet train), which launched on March 14, 2015. The Hokuriku Shinkansen increased the number of passengers at Toyama Station and sharply reduced passenger numbers at Toyama Airport, which is in the suburbs. Although the Hokuriku Shinkansen was a national project, the Toyama Basic Plan of course considered it. Indeed, the Portram connected with the Centram (a loop tram line in the city center) under the Hokuriku Shinkansen viaduct at Toyama Station in 2020 for greater passenger convenience. Note that our study includes the impact of the Hokuriku Shinkansen project.

It is important to note that compact city developments are not simple retail revitalization. Instead, they are town developments, which strive to reinvigorate the liveliness and the economic vitality of the community as a whole. According to OECD (2012), the characteristics of compact cities are dense and proximate development patterns, built-up areas linked by public transport systems, and accessibility to local services and jobs. The Toyama compact city strategies precisely aimed to form the spatial urban structure characterized by OECD (2012).<sup>12</sup>

<sup>&</sup>lt;sup>11</sup>Both Favore and Aeon malls extended their floor space further in 2019.

<sup>&</sup>lt;sup>12</sup>Given the circumstances of an aging and shrinking population in a typical local city, the Ministry of Land, Infrastructure, Transport and Tourism has advanced a "Compact and Network" policy since 2014 to maintain

Policymakers maintain that Toyama's compact city strategies serve to attract residents to geographically designated areas. We, therefore, hypothesize that these policies also boosted the economic performance of firms in these areas, including incumbent retailers.

#### 3 Empirical analysis

#### 3.1 Empirical methodology

This paper estimates the causal influence of Toyama compact city planning on incumbent retailers located in the city center zone and along public transportation line zones, using the DID matching estimation developed by Heckman et al. (1997) and Smith & Todd (2005).

The target zone for the city center is illustrated in Fig. 1. The treatment group comprises incumbent retailers located in the target zone. We apply a two-step procedure to choose the appropriate control group and establish the appropriate counterfactual pair of the treatment group. The first stage relates to the geographical similarities between the two groups. To consider this, we use the time lag of policy implementation. The target zones that are authorized later suffer from sprawling and thus seem to be a reasonable counterfactual for what would happen to the earlier target zones in the absence of policy (Busso et al., 2013; Givord et al., 2013; Wang, 2013). Fig. 2 depicts our twenty selected cities where a Basic Plan was authorized from 2015 onwards, i.e., 8–10 years after Toyama. We remove incumbent retailers in Sakai (not shown), which is a government-designated city with a large population, from the control group. Each local government designates the geographical area of the central city where the Basic Plan is applied. We select incumbent retailers located in the target zone of these cities as the potential set for the control group. The second stage relates to the firm similarities. We select the counterfactual pair from the potential set of the control group, using the Mahalanobis matching algorithm based on establishment-level attributes. Carefully controlling for the initial conditions of the treatment and control groups using this two-step procedure follows the assumption of pretreatment parallel trends.

Denote t as the treated year, t+s as s years after the treatment, and t-1 as one year before

sustainable urban management. These spatial developments aim at residential concentration in the city center and suburban hubs, with public transportation networks connecting them. We can, therefore, also regard the Toyama compact city model as a leading example of a "Compact and Network" policy.

the treatment. The ATT of the DID matching estimator measures the difference in the average growth of the outcomes between the treated and untreated such as:

$$ATT = E(Y_{i,t+s}^1 - Y_{i,t-1}^1 | T_{i,t} = 1, \mathbf{X}_{i,t-1}) - E(Y_{i,t+s}^0 - Y_{i,t-1}^0 | T_{i,t} = 1, \mathbf{X}_{i,t-1}),$$

where  $Y_{i,\tau}^1$  and  $Y_{i,\tau}^0$  are the naturally logged outcomes of an incumbent retailer *i* under treatment and nontreatment in year  $\tau$ , respectively,  $T_{i,t}$  is a dummy variable indicating an incumbent retailer, *i* is a treated retailer, and  $\mathbf{X}_{i,t-1}$  represents the characteristics of the incumbent retailer *i* in the pretreatment year. We can observe the average growth of the outcomes of the treated (the first term on the right-hand side), while we require the control group to estimate the counterfactual average growth (the second term on the right-hand side). We, therefore, apply the matching estimation to identify the counterfactual average growth from the control group using the observational covariates (Rubin, 1977).

The following ATT of the DID matching estimator then captures the magnitude of the difference in average growth of the outcomes between the treatment and control groups such as:

$$ATT = \frac{1}{N_1} \sum_{i \in \mathcal{I}_1} \left[ (Y_{i,t+s}^1 - Y_{i,t-1}^1) - \sum_{j \in \mathcal{I}_0} W_{ij} (Y_{j,t+s}^0 - Y_{j,t-1}^0) \right],$$

where  $\mathcal{I}_1$  is the set of indices corresponding to treated incumbent retailers in Toyama,  $N_1$  is the number of treated incumbent retailers in Toyama, j is the untreated incumbent retailers,  $\mathcal{I}_0$  is the set of indices corresponding to untreated incumbent retailers outside Toyama, and  $W_{ij}$  are the weights ( $0 \leq W_{ij} \leq 1$ ), which depend on the Mahalanobis distance between the matched pair i and j. In this paper, one-nearest neighbor matching (1-NNM) is used as the benchmark. In this case,  $W_{ij} = 1$  for all matched counterfactuals. As a robustness check, we also apply two-nearest neighbor matching (2-NNM). In this case,  $W_{ij} = 0.5$ .

The Mahalanobis distance is defined as the distance measured by the vector of variables such as:

$$\|m{x}_{i,t-1} - m{x}_{j,t-1}\|_{m{s}} = \sqrt{(m{x}_{i,t-1} - m{x}_{j,t-1})'m{S}^{-1}(m{x}_{i,t-1} - m{x}_{j,t-1})},$$

where  $\boldsymbol{x}_{i,t-1}$  and  $\boldsymbol{x}_{j,t-1}$  are the  $p \times 1$  vector of covariates for the treated and nontreated incumbent retailers in the pretreatment year, respectively, and  $\boldsymbol{S}$  is the  $p \times p$  covariance matrix of the vector of incumbent retailers attributes.<sup>13</sup>

The target zones for the public transport lines are the districts with easy accessibility to public transport in Fig. 1. Like above, the treatment group comprises incumbent retailers located in the target zones. The potential control groups are in cities where the Basic Plan was authorized around the same time but the public transport axes were not designed. To repeat, each local government designates the geographical areas of the central city where the Basic Plan is applied. However, there were no cities that designated target zones along the public transport axes even ten years after the approval of their Basic Plan. We, therefore, select incumbent retailers located outside the targeted central zone as a candidate counterfactual. This selection approach must violate the assumption of pretreatment parallel trends because the zones are just the suburbs of these cities, which are less likely to have the same features in the target zones for the public transport lines in Toyama. To address this concern, we limit the sample to cities that are spatially close to Toyama City. Fig. 3 plots the seven selected cities in Hokuriku region (Niigata, Toyama, Ishikawa, and Fukui Prefectures) where the Basic Plan was authorized by 2008. We select cities whose Basic Plans were authorized by 2008 and thus exclude Niigata (a government-designated city), Tsuruga (authorized in 2009), and Tokamachi (authorized in 2013). The target zones for the city center in each city are colored deep sky-blue. Incumbent retailers located outside these target zones in the seven cities provide the potential set for the control group. We then select the counterfactual pair of the treated incumbent retailers from the potential set, using the Mahalanobis matching algorithm based on establishment-level attributes. We also incorporate the neighboring market conditions of each establishment into the covariates to further address the assumption of pretreatment parallel trends.

#### 3.2 Data

The data are from the 2004, 2007, and 2014 Censuses of Commerce conducted by Ministry of Economy, Trade and Industry (METI), which is linked to the 2012 and 2016 Economic

<sup>&</sup>lt;sup>13</sup>Abadie and Imbens (2006) pointed out that the NNM matching estimator is biased when more than one continuous covariate is used to match, even in infinitely large samples. Abadie and Imbens (2011) later proposed a bias-corrected estimator to address this problem. This paper uses the teffects nnmatch command with the biasadj() option in Stata 15.1, which follows Abadie et al. (2004) and Abadie and Imbens (2011).

Censuses for Business Activity conducted by Ministry of Internal Affairs and Communications (MIC) and METI. The Census of Commerce covers establishments in the wholesale and retail sectors, comprising about 1,600,000, 1,500,000, and 1,400,000 establishments in 2004, 2007, and 2014, respectively. In this paper, we only focus on establishments in the retail sector. Note that the individual establishments are treated as the unit of observation. The incumbent establishments include establishment codes from the previous census, and this enables us to construct establishment-level panel data for incumbent retailers. We convert the location of each establishment from the block (Cho-Cho-Aza) level into combinations of longitude and latitude using geocoding. This enables us to recognize the corresponding mesh block for each establishment's location. Moreover, we construct a unique 50 meter meshed shapefile for Toyama City and add information on the target zones to the corresponding mesh (Fig. 1). We also make a shapefile for the control group, which includes information on the geographical areas of the city center based on the block level (see, e.g., the deep sky-blue colored polygon in Fig 3). Then we can identify whether the existing establishments are located in the target zones or not.

The data covers the periods before and after the Toyama compact city policies: the pretreatment period is prior to 2007 and the posttreatment period is from 2007 onward. We, therefore, can calculate the 2007–2012, 2007–2014, and 2007–2016 changes in the outcome variables. The outcomes are annual sales, which are deflated 2015 prices using the consumer price index (2015 = 100), sales floor space, and the number of employees. We take the natural logarithmic transformation for the outcome variables. We regard sales as a production output and floor space and employees as production inputs. From an economic perspective, productivity is more important than separate inputs and output in retail production. We, therefore, also consider measures of retail productivity such as retail sales per sales floor space and retail sales per employee as outcomes.

The matching is based on the establishment-level covariates during the pretreatment period between 2004 and 2007. We use annual sales of goods, sales floor space, the number of employees, along with the shares of female workers and full-time workers from both the 2004 and 2007 Censuses of Commerce. We also use opening hours, a parking lot dummy, the number of parking vehicles, the share of E-commerce, a dummy variable indicating the share of over-thecounter franchisees, a dummy variable reflecting large retail stores, and dummies for location environment characteristics from the 2007 Census of Commerce.<sup>14</sup>

In the analysis of the areas along the public transport lines, we obtain the neighboring market conditions for local employment and residential population around each individual establishment. A one-kilometer mesh population is obtained from the 2000, 2005, 2010, and 2015 Population Census (MIC), while one-kilometer mesh employment is obtained for 2001 and 2006 from the Establishment and Enterprise Census (MIC), the 2009 and 2014 Economic Census for Business Frame (MIC and METI), and the 2012 Economic Census for Business Activity (MIC and METI), respectively. We employ linear interpolation to estimate the values for missing years. We define a three-kilometer radius around the centroid of each mesh block where the incumbent retailer i is located as the neighboring market of the incumbent retailer i. Addresses are geocoded to latitude and longitude coordinates to obtain the corresponding mesh code of each establishment. Fig. 4 depicts the case of the market neighboring Toyama City Hall as an example, with total employment and residential population within the light-blue colored mesh serving as neighboring market variables.

#### **3.3** Empirical results and discussion

Table 2 presents the empirical results of the DID NNM estimations in the target zone for the city center.<sup>15</sup> Panels A and B in column 1, which apply the DID 1-NNM, suggest that compact city policies do not have any significant treatment effects on either sales growth or floor space growth throughout the nine-year study period. The ATT that estimates for retail employment growth in Panel C are also not significant over the five- and seven-year intervals. We finally identify a positive and significant impact on the employment growth of incumbent retailers located in the

<sup>&</sup>lt;sup>14</sup>Our data processing is as follows. First, we exclude establishments for which we cannot obtain location information at the block level. Second, we exclude the top and bottom one percent of observations for each measure of productivity growth as these are possible extreme outliers. Third, we restrict the surviving establishments to those where all necessary information is available to conduct the matching and to calculate the growth rates.

<sup>&</sup>lt;sup>15</sup>Tables A.1–A.5 in the Appendix present the matching results of the balancing tests based on the 1-NNM algorithm. Although the matches are selected to minimize the Mahalanobis distance between the treated and untreated retailers, the results in the tables suggest that the gaps in some variables increase after the matching. Moreover, the tables indicate that the variance ratios of some variables in the matched sample of the treated and untreated retailers depart from one after the matching.

city center after nine years of the policies in operation.

With the results from Panels A, B, and C in column 2, all of which apply the DID 2-NNM estimator, there are no significant treatment effects on retail activities over the first five years. After seven years of the policy, however, the treated incumbent retailers experienced 7.2 percentage point extra floor space growth relative to the control retailers. Nine years later, the treated incumbent retailers experienced an 8.6 percentage point increase in employment growth and a 9.9 percentage point increase in sales growth, indicating that they received spillover effects from compact city policy. Note that the Hokuriku Shinkansen, which we know has brought consumers to the target zone for the city center from outside the city, seems to have complemented the compact city polices. These findings, however, are not robust because we cannot obtain a positive result from the first three panels in column 1 except for retail employment growth over the nine-year interval.

The bottom two panels of Table 2, Panels D and E, consider our primary interest: the productivity growth of incumbent retailers. However, as shown, the results in the table remain insignificant regardless of the matching method. We cannot find any evidence that compact city policies are associated with the productivity growth of incumbent retailers in the city center.

Table 3 presents the empirical results in the target zones along the public transport lines.<sup>16</sup> This demonstrates that none of the outcomes for incumbent retailers differ from those of the matched counterfactuals.

Overall, the results in Tables 2 and 3 suggest that the Toyama compact city policies do not generate retail revitalization in the target zones. However, according to the Final Follow-up Report on the Second Round of Toyama Basic Plan for City Center Revitalization, the compact city policies of Toyama City positively affects the numbers of tram passengers and net migration to the city center because these variables reversed their downward trend during this time.<sup>17</sup> In evidence, ridership of the city tram was approximately 13,900 per day in 2016, which is 900 passengers higher than the targeted value, while net migration was approximately 700 people

<sup>&</sup>lt;sup>16</sup>Tables A.6–A.10 in the Appendix present matching results of balancing tests based on the 1-NNM algorithm. <sup>17</sup>The Final Follow-up Report on the Second Round of the Toyama Basic Plan for City Center Revitalization. Toyama City, May, 2017. https://www.city.toyama.toyama.jp/data/open/cnt/3/2332/1/ toyama\_saisyuFU\_2017.06.pdf (accessed July 7, 2021).

during the period from 2011 to 2016, which is 300 people higher. Ridership of the suburban tram and net migration in the transportation corridors also increased (Arai, 2019).

It is also possible that the policies tended to attract new retailers to the target zones, such that the incumbent retailers faced fiercer competition which lowered their productivity. However, new entrants can also increase the productivity of nearby incumbent retailers by bringing more customers to the area.<sup>18</sup>

As such, there should be positive externalities on the demand side as better visibility with the new tram, the net increase in inhabitants, and the entry of new retailers benefit incumbent retailers in the target zones. Why then is the productivity of surviving retailers unchanged? The key mechanism underlying these findings is likely tax distortions favoring incumbent retailers that act as exit barriers (Nishimura and Tachibana, 1996; Yamazaki, 2021). For example, incumbent retailers owning retail premises in the target areas, often mom-and-pop stores, tend to continue in their business even though their productivity is low because Japanese inheritance taxes give preferential treatment to real estate assets.<sup>19</sup> Surviving unattractive shops also seem to offset the positive shopping externalities. This implies that any newly created consumers are less likely to exert spillover benefits on shopping streets in the target zones. Indeed, the Final Follow-up Report on the Second Round of the Toyama Basic Plan for City Center Revitalization indicated that foot traffic in the city center remained flat and at a low level. Local footfall was only about 23,000 pedestrians on a Sunday in 2016, which is much lower than the targeted value of 32,000 pedestrians.<sup>20</sup>

#### 4 Conclusion

The compact city policies of Toyama City aim at enhancing residential concentration in the central city center and multiple areas in suburbs, and the public transport system connecting them. Town developments that are projected by Toyama compact city programs are not simple

<sup>&</sup>lt;sup>18</sup>The average productivity of surviving retailers in these areas can also increase when intensified competition expels less productive retailers (Håkansson et al., 2019).

<sup>&</sup>lt;sup>19</sup>The tax base of financial assets is evaluated at their market value, whereas the tax base of real estate assets is evaluated at about 70 percent of market value. Therefore, households have an incentive to possess real estate assets for inheritance.

<sup>&</sup>lt;sup>20</sup>The Final Follow-up Report also pointed out that empty shops remained at a high level in the central shopping streets.

retail revitalization. However, visibility on the new tram, the net increase in inhabitants, and the entry of new retailers are likely to increase shopper traffic in the target zones, and we expect these to indirectly affect the performance of incumbent retailers plagued with urban sprawl.

This paper contributes to the literature on urban economics examining place-based policy evaluation by focusing on the spillover effects of town development on individual-level firm performance. This contrasts with the existing literature, which has focused on place-based policies that directly benefit firms in target zones, such as tax exemptions or subsidies. Namely, we empirically measured the potential spillover effects of Toyama compact city policies on the productivity growth of incumbent retailers located in the targeted zones using DID matching estimations and establishment-level panel data. Geocoding techniques allowed us to identify establishments treated by the compact city policies with matching primarily conducted using establishment-level characteristics. The results suggest that the compact city policies exert no spillover effects on either inputs or outputs for incumbent retailers in the short term. However, these effects become positive in the longer term. Nevertheless, the existing policies do not generate positive spillover effects on incumbent retailer productivity. Although our chosen empirical model cannot provide the precise mechanism underpinning this, we reason that it is potentially because less productive retailers cling to the targeted areas for survival because Japanese inheritance taxes provide more favorable treatment to real estate assets (Nishimura and Tachibana, 1996; Yamazaki, 2021).

Two ancillary notes could serve to improve our understanding of the impacts of compact city policies on enhancing economic vitality. First, not only retailers but also service providers and hospitality businesses can enjoy the benefits of positive externalities arising from the demand side (Credit, 2018). The DID matching estimator we employ can also be applied to the productivity growth of these sectors. Unfortunately, there is no suitable long-run data available for Japan. Second, local government policymakers are often interested in the extent to which their own policies have an aggregate impact on productivity in the target zones. In such a situation, the sample size of the treatment group is of course reduced to one (i.e., only Toyama City in our case). Accordingly, standard matching estimations will not work. Instead, a synthetic control method could be applied for an aggregate-level evaluation if sufficient pre and postintervention information is available (Abadie et al., 2010; Abadie, 2021). We defer these items to future research.

#### Acknowledgments

We thank Nobuaki Hamaguchi, Masayuki Morikawa, Hajime Tadokoro, Masataka Saburi, Makoto Yano, and participants at a Research Institute of Economy, Trade and Industry (RIETI) seminar for their useful comments and suggestions. This research was conducted as part of the project "An Empirical Study on Compact City: Evaluating Place-Based Policies in Japan" at RIETI. This paper uses microdata (questionnaire information) from the 2004, 2007, and 2014 Censuses of Commerce (METI) and the 2012 and 2016 Economic Censuses for Business Activity (MIC and METI) with permission under the Statistical Law. This paper utilizes shapefiles by survey area and mesh statistical data of these censuses (MIC). Part of this paper was written while Shinichiro Iwata was a professor at University of Toyama.

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Sources: Information on population and Shapefiles with 500m mesh provided by Ministry of Internal Affairs and Communications (https://www.stat.go.jp/data/gis). Shapefiles of administrative district and railway/tram lines provided by the National Land Information Division, National Spatial Planning and Regional Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism (https://nlftp.mlit.go.jp/ksj/). Location information on commercial facilities of 10,000 square meters or more (point objects) provided by Zenkoku Ogata Koriten Soran, Toyo Keizai. Information on spatially targeted zones along public transport routes provided by Toyama City (https://www2.wagmap.jp/toyama/Portal).

Notes: Created by the authors using R ver. 3.6.3. The spatially targeted zone of the city center is surrounded by the black frame, while those of the public transport axes are surrounded by the gray frame.



**Figure 2** Twenty selected cities where a Basic Plan was authorized 8–10 years after Toyama City Source: Shapefiles of administrative district provided by the National Land Information Division, National Spatial Planning and Regional Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism (https://nlftp.mlit.go.jp/ksj/). List of authorized Basic Plans available from the Cabinet Office (https://www.chisou.go.jp/tiiki/chukatu/). Note: Created by the authors using R ver. 3.6.3.



#### Figure 3 Seven selected cities in Hokuriku region where a Basic Plan was authorized by 2008

Source: Shapefiles of administrative district provided by the National Land Information Division, National Spatial Planning and Regional Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism (https://nlftp.mlit.go.jp/ksj/). List of authorized Basic Plans available from the Cabinet Office (https://www.chisou.go.jp/tiiki/chukatu/).

Notes: Created by the authors using R ver. 3.6.3. The deep sky-blue colored areas indicate the spatially targeted zone in each city.



#### Figure 4 Example of a neighboring market

Sources: Shapefile of 1km mesh provided by the Ministry of Internal Affairs and Communications (https://www.stat.go.jp/data/mesh). Shapefiles of administrative district and railway/tram lines provided by the National Land Information Division, National Spatial Planning and Regional Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism (https://nlftp.mlit.go.jp/ksj/). Note: Created by the authors using R ver. 3.6.3.

Table 1: Key projects included in the Toyama Basic Plan for	r City Center Revitalization
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Objective	Project
The first round (Feb. 2007–Mar. 2012)	
Upgrading the public transportation system	Loop-line service for the city tram (Centram)
[Ridership of the city tram]	Circular community bus service
	Public transport pass for senior citizens
Creating liveliness	Redevelopment of the retail core
[Pedestrian flows]	Development of facilities (movie theater, food hall,
	multipurpose open space with a large grass roof)
Promoting residence	Promotion of constructing apartment buildings
[Residential population]	Financial support for house building and rent
The second round (Apr. 2012–Mar. 2017)	
Upgrading public transportation, cycling, and	Railway grade crossing around Toyama station
walking	North (Portram) south (Centram) connection of
[Ridership of the city tram]	trams at Toyama Station
	Construction of a north-south free passage at
	Toyama Station
	Land readjustment around Toyama Station
	New tram station opening
	Public transport pass for senior citizens
	Built environments on bicycle use
Creating liveliness	Mixed-use redevelopment projects (retail, movie
[Pedestrian flows]	theater, and hotel)
	Development of cultural exchange facilities (glass
	art museum and library)
Providing a high quality of life	Mixed-use redevelopment projects (retail and
[Social increase in residential population]	residence)
	Renovation of local exchange center
	Operation of childcare support facility

Sources: The Toyama Basic Plan for City Center Revitalization, Toyama City, February 2007. https://www.city.toyama.toyama.jp/data/open/cnt/3/2332/1/all.pdf (accessed July 7, 2021); The Second Round of Toyama Basic Plan for City Center Revitalization, Toyama City, April, 2012.

https://www.city.toyama.toyama.jp/data/open/cnt/3/2332/1/dai2kichukatukeikaku.pdf (accessed July 7, 2021). Note: Performance indicators in square brackets.

	DID 1-NNM	DID 2-NNM	Treatment	Control
Panel A: Growth rate of annua	al sales			
2007-2012	0.054	0.036	384	2,823
	(0.038)	(0.034)		
2007-2014	0.005	-0.010	304	2,426
	(0.049)	(0.042)		
2007-2016	0.078	0.099*	304	2,396
	(0.062)	(0.054)		
Panel B: Growth rate of sales	floor space			
2007-2012	0.030	0.038	375	2,729
	(0.034)	(0.029)		
2007-2014	0.019	0.072*	295	2,358
	(0.046)	(0.042)		
2007-2016	0.042	0.048	115	1,152
	(0.076)	(0.072)		
Panel C: Growth rate of emplo	oyees			
2007-2012	0.017	0.021	546	3,793
	(0.022)	(0.020)		
2007-2014	0.002	0.025	382	2,795
	(0.028)	(0.025)		
2007-2016	0.086***	0.082***	327	2,490
	(0.032)	(0.027)		
Panel D: Growth rate of annua	al sales per sales floc	or space		
2007-2012	0.079	0.063	374	2,729
	(0.055)	(0.046)		
2007-2014	-0.026	-0.038	298	2,353
	(0.066)	(0.060)		
2007-2016	0.004	-0.026	116	1,149
	(0.112)	(0.100)		
Panel E: Growth rate of annua	al sales per employee	e		
2007-2012	0.009	-0.010	384	2,820
	(0.042)	(0.042)		
2007-2014	0.026	-0.020	302	2,422
	(0.052)	(0.052)		
2007-2016	0.049	0.039	300	2,391
	(0.062)	(0.062)		

**Table 2:** Average treatment effect on the treated (ATT) of the Toyama compact city policies (the city center zone)

Notes: Standard errors following Abadie and Imbens (2006, 2012) in parentheses. \*\*\* and \* denote significance at the 1% and 10% level, respectively. 1-NNM/2-NNM based on Mahalanobis distance implemented by teffect nnmatch in Stata ver. 15.1.

	DID 1-NNM	DID 2-NNM	Treatment	Control
Panel A: Growth rate of ann	ual sales			
2007-2012	0.014	0.004	646	6,959
	(0.031)	(0.026)		
2007-2014	0.030	0.034	501	5,912
	(0.036)	(0.031)		
2007-2016	-0.022	0.003	521	5,870
	(0.038)	(0.035)		
Panel B: Growth rate of sale	s floor space			
2007-2012	0.012	0.019	624	6,644
	(0.031)	(0.028)		
2007-2014	0.039	0.042	482	5,651
	(0.037)	(0.033)		
2007-2016	0.061	0.049	119	2,165
	(0.060)	(0.048)		
Panel C: Growth rate of emp	loyees			
2007-2012	0.008	0.008	809	9,053
	(0.017)	(0.017)		
2007-2014	0.016	0.016	617	6,791
	(0.021)	(0.021)		
2007-2016	0.008	0.008	546	6,075
	(0.023)	(0.023)		
Panel D: Growth rate of ann	ual sales per sale floor	r space		
2007-2012	0.015	-0.014	621	6,640
	(0.041)	(0.037)		
2007-2014	-0.008	0.007	487	5,653
	(0.053)	(0.047)		·
2007-2016	-0.017	-0.044	200	2,174
	(0.074)	(0.061)		,
Panel E: Growth rate of ann	ual sales per employe	e		
2007-2012	0.009	-0.006	644	6,962
	(0.034)	(0.029)		
2007-2014	0.012	0.020	501	5,903
	(0.040)	(0.034)		,
2007-2016	-0.027	-0.023	522	5,859
	(0.041)	(0.036)		-

**Table 3:** Average treatment effect on the treated (ATT) of the Toyama compact city policies (public transportation line zones)

Notes: Standard errors following Abadie and Imbens (2006, 2012) in parentheses. 1-NNM/2-NNM based on Mahalanobis distance implemented by teffect nnmatch in Stata ver. 15.1.

### Appendix

 Table A.1 Balancing tests based on 1-NNM algorithm for annual sales (the city center zone)

Tuble Thit Datahening tests based on T-N.	200	7–2012	200	7–2014	200	07-2016
Variable	Raw	Matched	Raw	Matched	Raw	Matched
Panel A: Standardized differences						
Annual sales (2004)	-0.008	-0.033	-0.049	-0.023	-0.074	-0.035
Annual sales (2007)	0.023	-0.035	-0.039	-0.016	-0.077	-0.022
Employees (2004)	-0.043	-0.025	-0.071	0.007	-0.130	0.001
Employees (2007)	-0.056	-0.035	-0.090	0.000	-0.145	-0.033
Share of female workers (2004)	0.041	0.006	0.063	-0.032	0.039	0.026
Share of female workers (2007)	0.123	0.046	0.174	0.024	0.117	0.066
Share of full-time workers $(2004)$	0.094	0.086	0.038	0.017	-0.025	0.039
Share of full-time workers $(2007)$	0.148	0.112	0.116	0.103	0.044	0.106
Sales floor space (2004)	0.017	0.027	-0.040	0.037	-0.027	0.046
Sales floor space $(2007)$	0.006	0.029	-0.054	0.050	-0.052	0.058
Opening hours (2007)	-0.072	-0.124	0.005	-0.066	-0.019	-0.065
Parking lot dummy (2007)	-0.044	-0.043	-0.026	-0.048	-0.027	-0.034
Parking vehicles (2007)	-0.042	0.037	-0.055	0.021	-0.074	0.030
Share of E-commerce $(2007)$	-0.082	0.058	-0.091	0.003	-0.099	0.006
Share of over-the-counter $(2007)$	-0.332	-0.203	-0.364	-0.204	-0.372	-0.167
Franchisee dummy (2007)	-0.108	0.000	-0.025	0.000	-0.023	0.000
Large-scale retail stores dummy $(2007)$	0.154	0.007	0.218	0.017	0.175	0.009
<b>Panel B</b> : Variance ratio						
Annual sales (2004)	1.092	1.224	0.881	1.255	0.855	1.230
Annual sales (2007)	0.939	1.301	0.881	1.173	0.875	1.232
Employees $(2004)$	0.877	1.279	0.861	1.400	0.811	1.309
Employees $(2007)$	0.895	1.297	0.847	1.407	0.834	1.404
Share of female workers $(2004)$	1.155	1.400	1.072	1.259	1.077	1.300
Share of female workers $(2007)$	1.019	1.293	0.915	1.111	0.969	1.162
Share of full-time workers $(2004)$	1.208	1.279	1.178	1.202	1.123	1.159
Share of full-time workers $(2007)$	1.124	1.204	1.169	1.187	1.124	1.286
Sales floor space $(2004)$	0.826	1.298	0.906	1.335	0.910	1.373
Sales floor space $(2007)$	0.780	1.200	0.883	1.351	0.845	1.411
Opening hours $(2007)$	1.097	1.289	1.349	1.252	1.201	1.369
Parking lot dummy (2007)	1.026	1.023	1.016	1.025	1.016	1.017
Parking vehicles (2007)	0.699	1.095	0.679	0.989	0.654	1.049
Share of E-commerce $(2007)$	0.077	1.800	0.060	1.052	0.056	1.054
Share of over-the-counter $(2007)$	1.880	1.373	1.945	1.282	1.918	1.209
Franchisee dummy $(2007)$	0.386	1.000	0.837	1.000	0.834	1.000
Large-scale retail stores dummy (2007)	1.451	1.015	1.596	1.030	1.490	1.017

Lusie Her Dianong tobb based on 1-1010	200	7-2012	200'	7–2014	200	07-2016
Variable	Raw	Matched	Raw	Matched	Raw	Matched
<b>Panel A</b> : Standardized differences						
Annual sales (2004)	-0.024	-0.035	-0.052	-0.037	-0.036	-0.149
Annual sales (2007)	0.011	-0.026	-0.034	-0.030	0.015	0.022
Employees (2004)	-0.043	-0.020	-0.062	0.016	-0.110	-0.001
Employees (2007)	-0.063	-0.024	-0.076	-0.003	-0.132	-0.056
Share of female workers (2004)	0.060	0.007	0.062	-0.007	0.222	0.027
Share of female workers (2007)	0.117	0.048	0.146	0.030	0.189	0.037
Share of full-time workers (2004)	0.094	0.082	0.055	0.035	0.160	0.024
Share of full-time workers (2007)	0.153	0.102	0.133	0.100	0.310	0.115
Sales floor space $(2004)$	0.027	0.050	-0.036	0.073	0.018	0.059
Sales floor space $(2007)$	-0.005	0.041	-0.047	0.078	-0.121	-0.029
Opening hours (2007)	-0.091	-0.119	0.006	-0.050	-0.214	-0.257
Parking lot dummy (2007)	-0.062	-0.066	-0.049	-0.070	0.073	-0.074
Parking vehicles (2007)	-0.027	0.064	-0.042	0.040	-0.145	0.080
Share of E-commerce (2007)	-0.079	0.059	-0.089	0.003	-0.168	0.103
Share of over-the-counter $(2007)$	-0.314	-0.180	-0.373	-0.180	-0.336	-0.199
Franchisee dummy (2007)	-0.098	0.000	-0.028	0.000	-0.048	0.000
Large-scale retail stores dummy (2007)	0.154	0.008	0.212	0.018	0.350	0.019
<b>Panel B</b> : Variance ratio						
Annual sales (2004)	1.114	1.254	0.918	1.329	0.637	2.338
Annual sales (2007)	0.941	1.302	0.895	1.217	0.754	1.798
Employees $(2004)$	0.852	1.198	0.866	1.388	0.742	1.685
Employees $(2007)$	0.880	1.264	0.859	1.393	0.838	1.675
Share of female workers $(2004)$	1.135	1.379	1.061	1.246	1.022	1.352
Share of female workers $(2007)$	1.049	1.269	0.969	1.131	1.189	1.227
Share of full-time workers $(2004)$	1.201	1.260	1.202	1.194	1.187	1.338
Share of full-time workers $(2007)$	1.146	1.190	1.188	1.158	1.111	1.439
Sales floor space $(2004)$	0.812	1.269	0.902	1.294	1.088	1.964
Sales floor space $(2007)$	0.749	1.230	0.877	1.379	0.965	1.757
Opening hours (2007)	1.155	1.342	1.420	1.315	0.753	1.215
Parking lot dummy $(2007)$	1.036	1.036	1.028	1.038	0.968	1.055
Parking vehicles (2007)	0.708	1.137	0.676	1.000	0.595	1.148
Share of E-commerce $(2007)$	0.077	1.800	0.061	1.052	0.004	25.000
Share of over-the-counter $(2007)$	1.865	1.299	2.090	1.258	2.912	1.310
Franchisee dummy $(2007)$	0.418	1.000	0.821	1.000	0.726	1.000
Large-scale retail stores dummy (2007)	1.456	1.016	1.576	1.032	1.539	1.015

Table A.2 Blancing tests based on 1-NNM algorithm for sales floor space (the city center zone)

Table A.9 Dianeing tests based on 1-1010	200	7-2012	200	7–2014	200	07-2016
Variable	Raw	Matched	Raw	Matched	Raw	Matched
<b>Panel A</b> : Standardized differences						
Annual sales (2004)	-0.029	-0.013	-0.080	-0.023	-0.098	-0.033
Annual sales (2007)	0.021	0.004	-0.057	-0.015	-0.087	-0.022
Employees (2004)	-0.079	0.001	-0.092	0.007	-0.128	0.003
Employees (2007)	-0.097	-0.027	-0.131	-0.034	-0.177	-0.056
Share of female workers $(2004)$	0.099	-0.002	0.062	-0.024	0.060	0.046
Share of female workers $(2007)$	0.173	0.048	0.117	0.032	0.112	0.072
Share of full-time workers $(2004)$	0.069	0.125	-0.004	0.017	-0.021	0.070
Share of full-time workers (2007)	0.125	0.125	0.046	0.079	0.020	0.129
Sales floor space $(2004)$	0.009	0.052	-0.043	0.060	-0.026	0.049
Sales floor space $(2007)$	-0.007	0.040	-0.070	0.076	-0.050	0.057
Opening hours (2007)	-0.046	-0.103	-0.030	-0.055	-0.051	-0.083
Parking lot dummy (2007)	-0.023	-0.027	-0.026	-0.043	-0.019	-0.044
Parking vehicles (2007)	-0.075	0.023	-0.068	0.036	-0.083	0.048
Share of E-commerce (2007)	-0.071	0.009	-0.093	0.010	-0.097	0.014
Share of over-the-counter $(2007)$	-0.309	-0.170	-0.357	-0.193	-0.372	-0.161
Franchisee dummy (2007)	-0.020	0.000	-0.033	0.000	-0.006	0.000
Large-scale retail stores dummy (2007)	0.192	0.005	0.180	0.014	0.168	0.008
<b>Panel B</b> : Variance ratio						
Annual sales (2004)	0.965	1.125	0.949	1.277	0.972	1.316
Annual sales (2007)	0.834	1.114	0.875	1.176	0.902	1.244
Employees $(2004)$	0.829	1.200	0.849	1.343	0.816	1.371
Employees $(2007)$	0.838	1.203	0.848	1.319	0.811	1.355
Share of female workers $(2004)$	1.122	1.230	1.055	1.260	1.095	1.255
Share of female workers $(2007)$	1.010	1.087	0.993	1.140	1.012	1.185
Share of full-time workers $(2004)$	1.172	1.202	1.115	1.217	1.124	1.196
Share of full-time workers $(2007)$	1.170	1.178	1.109	1.224	1.112	1.316
Sales floor space $(2004)$	0.803	1.213	0.874	1.246	0.907	1.361
Sales floor space $(2007)$	0.767	1.143	0.857	1.246	0.861	1.437
Opening hours (2007)	1.077	1.295	1.196	1.319	1.255	1.395
Parking lot dummy $(2007)$	1.018	1.019	1.017	1.025	1.013	1.025
Parking vehicles (2007)	0.628	1.053	0.643	1.020	0.625	1.066
Share of E-commerce $(2007)$	0.009	0.073	0.053	1.063	0.055	1.066
Share of over-the-counter $(2007)$	1.863	1.266	1.874	1.229	1.920	1.177
Franchisee dummy $(2007)$	0.870	1.000	0.789	1.000	0.955	1.000
Large-scale retail stores dummy (2007)	1.487	1.008	1.476	1.026	1.467	1.016

Table A.3 Blancing tests based on 1-NNM algorithm for employees (the city center zone)

**Table A.4** Blancing tests based on 1-NNM algorithm for annual sales per sales floor space (the citycenter zone)

	200	7-2012	200'	7-2014	200	7-2016
Variable	Raw	Matched	Raw	Matched	Raw	Matched
<b>Panel A</b> : Standardized differences						
Annual sales (2004)	-0.005	-0.028	-0.050	-0.049	-0.033	-0.185
Annual sales (2007)	0.027	-0.025	-0.035	-0.036	0.020	0.006
Employees (2004)	-0.029	-0.017	-0.059	-0.009	-0.089	-0.002
Employees (2007)	-0.045	-0.028	-0.072	-0.024	-0.112	-0.054
Share of female workers $(2004)$	0.053	0.014	0.059	-0.011	0.230	0.052
Share of female workers $(2007)$	0.118	0.047	0.140	0.021	0.191	0.055
Share of full-time workers $(2004)$	0.095	0.079	0.051	0.025	0.135	-0.017
Share of full-time workers (2007)	0.165	0.114	0.136	0.095	0.302	0.092
Sales floor space (2004)	0.040	0.047	-0.023	0.052	0.013	0.045
Sales floor space $(2007)$	0.020	0.046	-0.019	0.067	-0.105	-0.030
Opening hours (2007)	-0.082	-0.119	-0.003	-0.058	-0.223	-0.283
Parking lot dummy (2007)	-0.071	-0.050	-0.051	-0.069	0.061	-0.091
Parking vehicles (2007)	-0.017	0.052	-0.037	0.041	-0.141	0.093
Share of E-commerce $(2007)$	-0.079	0.059	-0.089	0.003	-0.168	0.103
Share of over-the-counter $(2007)$	-0.305	-0.180	-0.365	-0.197	-0.330	-0.198
Franchisee dummy (2007)	-0.098	0.000	-0.030	0.000	-0.044	0.000
Large-scale retail stores dummy (2007)	0.161	0.008	0.214	0.018	0.345	0.018
<b>Panel B</b> : Variance ratio						
Annual sales (2004)	1.102	1.226	0.917	1.331	0.636	2.375
Annual sales (2007)	0.941	1.273	0.906	1.205	0.764	1.772
Employees $(2004)$	0.863	1.215	0.862	1.428	0.738	1.619
Employees $(2007)$	0.886	1.280	0.854	1.428	0.833	1.633
Share of female workers $(2004)$	1.150	1.406	1.052	1.264	1.031	1.325
Share of female workers $(2007)$	1.044	1.305	0.957	1.150	1.185	1.165
Share of full-time workers $(2004)$	1.197	1.264	1.192	1.201	1.168	1.315
Share of full-time workers $(2007)$	1.133	1.186	1.185	1.177	1.112	1.402
Sales floor space $(2004)$	0.821	1.298	0.895	1.320	1.080	2.035
Sales floor space $(2004)$	0.774	1.203	0.862	1.357	0.994	1.804
Opening hours (2007)	1.138	1.322	1.409	1.302	0.754	1.241
Parking lot dummy $(2007)$	1.039	1.025	1.029	1.036	0.975	1.068
Parking vehicles (2007)	0.714	1.125	0.682	1.005	0.590	1.150
Share of E-commerce $(2007)$	0.077	1.800	0.060	1.052	0.004	25.000
Share of over-the-counter $(2007)$	1.807	1.284	2.030	1.300	2.187	1.311
Franchisee dummy $(2007)$	0.419	1.000	0.811	1.000	0.744	1.000
Large-scale retail stores dummy $(2007)$	1.477	1.016	1.578	1.031	1.535	1.015

Table A.5 Blancing tests based on 1-NNM algorithm for annual sales per employee (the city center zone) (

	200	7-2012	200	7-2014	200	7-2016
Variable	Raw	Matched	Raw	Matched	Raw	Matched
<b>Panel A</b> : Standardized differences						
Annual sales (2004)	-0.011	-0.037	-0.044	-0.012	-0.067	-0.037
Annual sales (2007)	0.027	-0.036	-0.035	-0.007	-0.072	-0.026
Employees (2004)	-0.038	-0.022	-0.067	0.013	-0.131	0.001
Employees $(2007)$	-0.053	-0.037	-0.088	0.002	-0.148	-0.031
Share of female workers $(2004)$	0.039	0.006	0.050	-0.046	0.029	0.014
Share of female workers $(2007)$	0.114	0.044	0.162	0.013	0.118	0.060
Share of full-time workers $(2004)$	0.088	0.084	0.034	0.008	-0.018	0.038
Share of full-time workers $(2007)$	0.147	0.111	0.118	0.098	0.046	0.111
Sales floor space $(2004)$	0.020	0.024	-0.038	0.048	-0.025	0.040
Sales floor space $(2007)$	0.009	0.030	-0.046	0.069	-0.046	0.058
Opening hours (2007)	-0.073	-0.116	0.013	-0.059	-0.018	-0.058
Parking lot dummy (2007)	-0.045	-0.043	-0.024	-0.048	-0.024	-0.027
Parking vehicles (2007)	-0.039	0.039	-0.053	0.027	-0.076	0.022
Share of E-commerce $(2007)$	-0.082	0.058	-0.091	0.003	-0.099	0.006
Share of over-the-counter $(2007)$	-0.332	-0.202	-0.360	-0.201	-0.369	-0.166
Franchisee dummy $(2007)$	-0.108	0.000	-0.027	0.000	-0.028	0.000
Large-scale retail stores dummy (2007)	0.155	0.007	0.214	0.018	0.173	0.009
<b>Panel B</b> : Variance ratio						
Annual sales (2004)	1.103	1.229	0.876	1.255	0.843	1.229
Annual sales (2007)	0.935	1.293	0.873	1.166	0.868	1.235
Employees $(2004)$	0.872	1.269	0.859	1.411	0.817	1.314
Employees $(2007)$	0.896	1.300	0.853	1.413	0.842	1.410
Share of female workers $(2004)$	1.153	1.405	1.065	1.235	1.075	1.305
Share of female workers $(2007)$	1.025	1.291	0.909	1.091	0.955	1.159
Share of full-time workers $(2004)$	1.201	1.245	1.168	1.177	1.128	1.167
Share of full-time workers $(2007)$	1.125	1.205	1.169	1.175	1.130	1.294
Sales floor space $(2004)$	0.823	1.286	0.898	1.327	0.907	1.372
Sales floor space $(2007)$	0.777	1.190	0.854	1.309	0.821	1.387
Opening hours $(2007)$	1.091	1.296	1.394	1.278	1.201	1.390
Parking lot dummy $(2007)$	1.027	1.023	1.015	1.026	1.015	1.014
Parking vehicles (2007)	0.701	1.097	0.684	1.003	0.655	1.043
Share of E-commerce $(2007)$	0.077	1.800	0.060	1.052	0.057	1.054
Share of over-the-counter $(2007)$	1.883	1.372	1.908	1.272	1.887	1.200
Franchisee dummy $(2007)$	0.386	1.000	0.824	1.000	0.802	1.000
Large-scale retail stores dummy (2007)	1.454	1.015	1.585	1.031	1.484	1.018

**Table A.6** Blancing tests based on 1-NNM algorithm for annual sales (public transportation line zones)

Variable         Raw         Matched         Raw         Matched         Raw         Matched           Panel A: Standardized differences
Panel A: Standardized differencesAnnual sales (2004)0.018 $-0.016$ $-0.010$ $-0.028$ $-0.001$ $-0.041$ Annual sales (2007)0.0710.0280.0430.0270.0530.000Employees (2004)0.0570.0280.0290.0440.0570.000Employees (2007)0.1030.0470.0920.0450.1080.025Share of female workers (2004)0.100 $-0.008$ 0.1400.0030.132 $-0.029$ Share of full-time workers (2007)0.1260.0020.152 $-0.025$ 0.147 $-0.017$ Share of full-time workers (2007) $-0.053$ 0.010 $-0.064$ $-0.021$ $-0.068$ 0.005Share of full-time workers (2007) $-0.153$ 0.010 $-0.054$ $-0.010$ $-0.035$ $-0.002$ Sales floor space (2004)0.1160.0300.1210.0180.136 $-0.002$ Sales floor space (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking lot dummy (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking vehicles (2007) $-0.095$ $0.091$ $-0.064$ $0.015$ $-0.062$ $0.012$ Share of over-the-counter (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.163$ $0.000$ $0.220$ $0.000$ $0.232$ $-0.005$ Neighboring total employment (2004) $0.234$
Annual sales (2004)       0.018       -0.016       -0.010       -0.028       -0.001       -0.041         Annual sales (2007)       0.071       0.028       0.043       0.027       0.053       0.000         Employees (2004)       0.057       0.028       0.029       0.045       0.108       0.025         Share of female workers (2004)       0.100       -0.008       0.140       0.003       0.132       -0.029         Share of female workers (2007)       0.126       0.002       0.152       -0.025       0.147       -0.017         Share of full-time workers (2007)       -0.053       0.010       -0.054       -0.010       -0.035       -0.002         Sales floor space (2004)       0.116       0.030       0.121       0.018       0.136       -0.009         Sales floor space (2007)       0.145       0.051       0.145       0.010       -0.032       -0.014       -0.013       -0.013       -0.014       -0.033       -0.012       -0.019       -0.012       -0.029       Sales floor space (2007)       0.115       0.066       0.135       0.018       0.154       -0.012       -0.079       -0.044         Parking vehicles (2007)       -0.017       -0.031       -0.054       -0.012       -
Annual sales (2007) $0.071$ $0.028$ $0.043$ $0.027$ $0.053$ $0.000$ Employees (2004) $0.057$ $0.028$ $0.029$ $0.024$ $0.057$ $0.000$ Employees (2007) $0.103$ $0.047$ $0.092$ $0.045$ $0.108$ $0.025$ Share of female workers (2007) $0.126$ $0.002$ $0.152$ $-0.025$ $0.147$ $-0.017$ Share of full-time workers (2007) $0.126$ $0.002$ $0.152$ $-0.025$ $0.147$ $-0.017$ Share of full-time workers (2007) $-0.053$ $0.010$ $-0.054$ $-0.010$ $-0.035$ $-0.002$ Sales floor space (2004) $0.116$ $0.030$ $0.121$ $0.018$ $0.136$ $-0.009$ Sales floor space (2007) $0.145$ $0.051$ $0.014$ $-0.048$ $-0.009$ Sales floor space (2007) $0.145$ $0.051$ $0.145$ $0.012$ $-0.079$ Opening hours (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ Parking lot dummy (2007) $-0.015$ $0.066$ $0.135$ $0.058$ $0.169$ $0.36$ Share of e-commerce (2007) $0.015$ $0.000$ $0.022$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2007) $0.248$ $-0.011$ $0.252$ $0.005$ $0$
Employees (2004) $0.057$ $0.028$ $0.029$ $0.024$ $0.057$ $0.000$ Employees (2007) $0.103$ $0.047$ $0.092$ $0.045$ $0.108$ $0.025$ Share of female workers (2004) $0.100$ $-0.008$ $0.140$ $0.003$ $0.132$ $-0.029$ Share of full-time workers (2004) $-0.032$ $0.014$ $-0.025$ $0.147$ $-0.017$ Share of full-time workers (2004) $-0.032$ $0.014$ $-0.086$ $-0.021$ $-0.068$ $0.005$ Share of full-time workers (2007) $-0.053$ $0.010$ $-0.054$ $-0.010$ $-0.035$ $-0.002$ Sales floor space (2004) $0.116$ $0.030$ $0.121$ $0.018$ $0.136$ $-0.009$ Sales floor space (2007) $0.145$ $0.051$ $0.145$ $0.018$ $0.154$ $-0.009$ Sales floor space (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking lot dummy (2007) $-0.017$ $-0.031$ $-0.054$ $-0.012$ $-0.079$ $-0.004$ Parking vehicles (2007) $-0.095$ $0.091$ $-0.064$ $0.015$ $-0.062$ $0.012$ Share of E-commerce (2007) $0.032$ $0.000$ $0.222$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.035$ Neighboring residential population (2
Employees (2007) $0.103$ $0.047$ $0.092$ $0.045$ $0.108$ $0.025$ Share of female workers (2004) $0.100$ $-0.008$ $0.140$ $0.003$ $0.132$ $-0.029$ Share of female workers (2007) $0.126$ $0.002$ $0.152$ $-0.025$ $0.147$ $-0.017$ Share of full-time workers (2007) $-0.032$ $0.014$ $-0.086$ $-0.021$ $-0.068$ $0.005$ Share of full-time workers (2007) $-0.053$ $0.010$ $-0.054$ $-0.010$ $-0.035$ $-0.002$ Sales floor space (2004) $0.116$ $0.030$ $0.121$ $0.018$ $0.156$ $-0.009$ Sales floor space (2007) $0.145$ $0.051$ $0.145$ $0.018$ $0.154$ $-0.009$ Sales floor space (2007) $0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Opening hours (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking vehicles (2007) $0.115$ $0.066$ $0.135$ $0.058$ $0.169$ $0.036$ Share of er-commerce (2007) $0.016$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Large-scale retail stores dummy (2007) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring residential populatio
Share of female workers (2004)       0.100       -0.008       0.140       0.003       0.132       -0.029         Share of female workers (2007)       0.126       0.002       0.152       -0.025       0.147       -0.017         Share of full-time workers (2004)       -0.032       0.014       -0.086       -0.021       -0.068       0.005         Share of full-time workers (2007)       -0.053       0.010       -0.054       -0.010       -0.035       -0.002         Sales floor space (2004)       0.116       0.030       0.121       0.018       0.136       -0.009         Sales floor space (2007)       0.145       0.051       0.145       0.018       0.154       0.005         Opening hours (2007)       -0.054       -0.079       -0.014       -0.043       -0.023       -0.066         Parking vehicles (2007)       0.115       0.066       0.135       0.058       0.169       0.036         Share of e-commerce (2007)       0.156       0.011       0.137       -0.039       0.148       -0.019         Franchisee dummy (2007)       0.163       0.000       0.130       0.006       0.110       0.000         Large-scale retail stores dummy (2007)       0.163       0.000       0.130
Share of female workers (2007)       0.126       0.002       0.152       -0.025       0.147       -0.017         Share of full-time workers (2004)       -0.032       0.014       -0.086       -0.021       -0.068       0.005         Share of full-time workers (2007)       -0.053       0.010       -0.054       -0.010       -0.035       -0.002         Sales floor space (2004)       0.116       0.030       0.121       0.018       0.136       -0.009         Sales floor space (2007)       0.145       0.051       0.145       0.018       0.154       0.005         Opening hours (2007)       -0.054       -0.079       -0.014       -0.043       -0.023       -0.066         Parking lot dummy (2007)       -0.017       -0.031       -0.054       -0.012       -0.079       -0.004         Parking vehicles (2007)       0.115       0.066       0.135       0.058       0.169       0.036         Share of E-commerce (2007)       0.156       0.011       0.137       -0.062       0.012         Share of ever-the-counter (2007)       0.163       0.000       0.039       0.000         Large-scale retail stores dummy (2007)       0.163       0.000       0.130       0.006       0.110       0.001
Share of full-time workers (2004)       -0.032       0.014       -0.086       -0.021       -0.068       0.005         Share of full-time workers (2007)       -0.053       0.010       -0.054       -0.010       -0.035       -0.002         Sales floor space (2004)       0.116       0.030       0.121       0.018       0.136       -0.009         Sales floor space (2007)       0.145       0.051       0.145       0.018       0.154       0.005         Opening hours (2007)       -0.054       -0.079       -0.014       -0.043       -0.023       -0.066         Parking lot dummy (2007)       -0.017       -0.031       -0.054       -0.012       -0.079       -0.004         Parking vehicles (2007)       0.115       0.066       0.135       0.058       0.169       0.036         Share of E-commerce (2007)       0.156       0.011       0.137       -0.039       0.148       -0.019         Franchisee dummy (2007)       0.163       0.000       0.022       0.000       0.039       0.000         Large-scale retail stores dummy (2007)       0.163       0.000       0.130       0.006       0.110       0.000         Neighboring total employment (2004)       0.234       -0.011       0.252 <t< td=""></t<>
Share of full-time workers (2007) $-0.053$ $0.010$ $-0.054$ $-0.010$ $-0.035$ $-0.002$ Sales floor space (2004) $0.116$ $0.030$ $0.121$ $0.018$ $0.136$ $-0.009$ Sales floor space (2007) $0.145$ $0.051$ $0.145$ $0.018$ $0.154$ $0.005$ Opening hours (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking lot dummy (2007) $-0.017$ $-0.031$ $-0.054$ $-0.012$ $-0.079$ $-0.004$ Parking vehicles (2007) $0.115$ $0.066$ $0.135$ $0.058$ $0.169$ $0.036$ Share of E-commerce (2007) $-0.095$ $0.091$ $-0.064$ $0.015$ $-0.062$ $0.012$ Share of over-the-counter (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.032$ $0.000$ $0.022$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.066$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.027$ Neighboring residential population (2004) $0.228$ $-0.033$ $0.247$ $0.005$ $0.232$ $-0.034$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratioHHHHHHHHAnnual sales
Sales floor space (2004)       0.116       0.030       0.121       0.018       0.136       -0.009         Sales floor space (2007)       0.145       0.051       0.145       0.018       0.154       0.005         Opening hours (2007)       -0.054       -0.079       -0.014       -0.043       -0.023       -0.066         Parking lot dummy (2007)       -0.017       -0.031       -0.054       -0.012       -0.079       -0.004         Parking vehicles (2007)       0.115       0.066       0.135       0.058       0.169       0.036         Share of E-commerce (2007)       -0.095       0.091       -0.064       0.015       -0.062       0.012         Share of over-the-counter (2007)       0.156       0.011       0.137       -0.039       0.148       -0.019         Franchisee dummy (2007)       0.032       0.000       0.022       0.000       0.039       0.000         Large-scale retail stores dummy (2007)       0.163       0.000       0.130       0.006       0.110       0.000         Neighboring total employment (2004)       0.234       -0.011       0.252       0.005       0.249       -0.005         Neighboring residential population (2007)       0.248       -0.001       0.266
Sales floor space (2007) $0.145$ $0.051$ $0.145$ $0.018$ $0.154$ $0.005$ Opening hours (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking lot dummy (2007) $-0.017$ $-0.031$ $-0.054$ $-0.012$ $-0.079$ $-0.004$ Parking vehicles (2007) $0.115$ $0.066$ $0.135$ $0.058$ $0.169$ $0.036$ Share of E-commerce (2007) $-0.095$ $0.091$ $-0.064$ $0.015$ $-0.062$ $0.012$ Share of over-the-counter (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.032$ $0.000$ $0.022$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring residential population (2007) $0.248$ $-0.001$ $0.266$ $0.015$ $0.263$ $0.004$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratioAnnual sales (2004) $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2007) $1.143$ $1.203$ $1.077$ $1.252$ $1.065$ $1.247$ Employees (2007) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1$
Opening hours (2007) $-0.054$ $-0.079$ $-0.014$ $-0.043$ $-0.023$ $-0.066$ Parking lot dummy (2007) $-0.017$ $-0.031$ $-0.054$ $-0.012$ $-0.079$ $-0.004$ Parking vehicles (2007) $0.115$ $0.066$ $0.135$ $0.058$ $0.169$ $0.036$ Share of E-commerce (2007) $-0.095$ $0.091$ $-0.064$ $0.015$ $-0.062$ $0.012$ Share of over-the-counter (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.032$ $0.000$ $0.022$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring residential population (2004) $0.228$ $-0.033$ $0.247$ $0.005$ $0.232$ $-0.034$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratio $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: (2004) $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2007) $1.137$ $1.196$ $1.062$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
Parking lot dummy (2007) $-0.017$ $-0.031$ $-0.054$ $-0.012$ $-0.079$ $-0.004$ Parking vehicles (2007)0.1150.0660.1350.0580.1690.036Share of E-commerce (2007) $-0.095$ 0.091 $-0.064$ 0.015 $-0.062$ 0.012Share of over-the-counter (2007)0.1560.0110.137 $-0.039$ 0.148 $-0.019$ Franchisee dummy (2007)0.0320.0000.0220.0000.0390.000Large-scale retail stores dummy (2007)0.1630.0000.1300.0060.1100.000Neighboring total employment (2004)0.234 $-0.011$ 0.2520.0050.249 $-0.005$ Neighboring residential population (2004)0.228 $-0.033$ 0.2470.0050.232 $-0.034$ Neighboring residential population (2007)0.236 $-0.026$ 0.2560.0110.240 $-0.027$ Panel B: Variance ratioI.1431.1991.0611.1311.1051.126Annual sales (2004)1.1431.1991.0611.1251.0851.132Employees (2004)1.1431.2031.0771.2521.0651.247Employees (2007)1.1431.2141.0721.2151.0891.206
Parking vehicles (2007) $0.115$ $0.066$ $0.135$ $0.058$ $0.169$ $0.036$ Share of E-commerce (2007) $-0.095$ $0.091$ $-0.064$ $0.015$ $-0.062$ $0.012$ Share of over-the-counter (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.032$ $0.000$ $0.022$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring residential population (2007) $0.248$ $-0.001$ $0.266$ $0.015$ $0.263$ $0.004$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratioIntal $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2007) $1.137$ $1.196$ $1.062$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
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Share of over-the-counter (2007) $0.156$ $0.011$ $0.137$ $-0.039$ $0.148$ $-0.019$ Franchisee dummy (2007) $0.032$ $0.000$ $0.022$ $0.000$ $0.039$ $0.000$ Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring total employment (2007) $0.248$ $-0.001$ $0.266$ $0.015$ $0.263$ $0.004$ Neighboring residential population (2004) $0.228$ $-0.033$ $0.247$ $0.005$ $0.232$ $-0.034$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratio $-0.026$ $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2007) $1.137$ $1.196$ $1.062$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
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Large-scale retail stores dummy (2007) $0.163$ $0.000$ $0.130$ $0.006$ $0.110$ $0.000$ Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring total employment (2007) $0.248$ $-0.001$ $0.266$ $0.015$ $0.263$ $0.004$ Neighboring residential population (2004) $0.228$ $-0.033$ $0.247$ $0.005$ $0.232$ $-0.034$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratio $-0.026$ $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2004) $1.143$ $1.199$ $1.061$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.143$ $1.203$ $1.077$ $1.252$ $1.065$ $1.247$ Employees (2007) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
Neighboring total employment (2004) $0.234$ $-0.011$ $0.252$ $0.005$ $0.249$ $-0.005$ Neighboring total employment (2007) $0.248$ $-0.001$ $0.266$ $0.015$ $0.263$ $0.004$ Neighboring residential population (2004) $0.228$ $-0.033$ $0.247$ $0.005$ $0.232$ $-0.034$ Neighboring residential population (2007) $0.236$ $-0.026$ $0.256$ $0.011$ $0.240$ $-0.027$ Panel B: Variance ratioInstance ratioInstance ratioInstance ratioInstance ratioInstance ratioAnnual sales (2004) $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2007) $1.137$ $1.196$ $1.062$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
Neighboring total employment (2007)       0.248       -0.001       0.266       0.015       0.263       0.004         Neighboring residential population (2004)       0.228       -0.033       0.247       0.005       0.232       -0.034         Neighboring residential population (2007)       0.236       -0.026       0.256       0.011       0.240       -0.027         Panel B: Variance ratio
Neighboring residential population (2004)       0.228       -0.033       0.247       0.005       0.232       -0.034         Neighboring residential population (2007)       0.236       -0.026       0.256       0.011       0.240       -0.027         Panel B: Variance ratio       1.143       1.199       1.061       1.131       1.105       1.126         Annual sales (2004)       1.137       1.196       1.062       1.125       1.085       1.132         Employees (2004)       1.118       1.203       1.077       1.252       1.065       1.247         Employees (2007)       1.143       1.214       1.072       1.215       1.089       1.206
Neighboring residential population (2007)       0.236       -0.026       0.256       0.011       0.240       -0.027         Panel B: Variance ratio       1.143       1.199       1.061       1.131       1.105       1.126         Annual sales (2004)       1.143       1.199       1.061       1.131       1.105       1.126         Annual sales (2007)       1.137       1.196       1.062       1.125       1.085       1.132         Employees (2004)       1.118       1.203       1.077       1.252       1.065       1.247         Employees (2007)       1.143       1.214       1.072       1.215       1.089       1.206
Panel B: Variance ratio       1.143       1.199       1.061       1.131       1.105       1.126         Annual sales (2004)       1.143       1.199       1.061       1.131       1.105       1.126         Annual sales (2007)       1.137       1.196       1.062       1.125       1.085       1.132         Employees (2004)       1.118       1.203       1.077       1.252       1.065       1.247         Employees (2007)       1.143       1.214       1.072       1.215       1.089       1.206
Annual sales (2004) $1.143$ $1.199$ $1.061$ $1.131$ $1.105$ $1.126$ Annual sales (2007) $1.137$ $1.196$ $1.062$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.118$ $1.203$ $1.077$ $1.252$ $1.065$ $1.247$ Employees (2007) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
Annual sales (2007) $1.137$ $1.196$ $1.062$ $1.125$ $1.085$ $1.132$ Employees (2004) $1.118$ $1.203$ $1.077$ $1.252$ $1.065$ $1.247$ Employees (2007) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
Employees (2004) $1.118$ $1.203$ $1.077$ $1.252$ $1.065$ $1.247$ Employees (2007) $1.143$ $1.214$ $1.072$ $1.215$ $1.089$ $1.206$
$ \begin{array}{c} \text{Employees (2007)} \\ \text{Employees (2007)} \\ 1.143 \\ 1.214 \\ 1.072 \\ 1.215 \\ 1.089 \\ 1.206 \\ 1.$
Share of female workers $(2004)$ 1.040 1.148 1.032 1.114 1.025 1.176
Share of female workers $(2007)$ 0.996 1.088 0.956 1.120 0.977 1.134
Share of full-time workers $(2004)$ 0.977 1.024 0.933 1.003 0.952 1.059
Share of full-time workers $(2007)$ 0.924 1.042 0.916 1.035 0.928 1.035
Sales floor space $(2004)$ 1140 1128 1142 1152 1139 1174
Sales floor space $(2007)$ 1.084 1.129 1.058 1.107 1.075 1.167
Opening hours (2007) $0.983$ $1.283$ $1.106$ $1.287$ $0.998$ $1.431$
Parking lot dummy (2007) 0.995 0.988 0.977 0.994 0.962 0.998
Parking vehicles $(2007)$ 1 190 1 061 1 104 1 038 1 141 1 055
Share of E-commerce $(2007)$ $0.020 57.056 0.260 1.050 0.294 1.041$
Share of $D$ commerce (2007) $0.326 = 0.000 = 0.200 = 0.000 = 0.251 = 1.011$ Share of over-the-counter (2007) $0.834 = 1.066 = 0.869 = 1.119 = 0.850 = 1.141$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Large-scale retail stores dummy $(2007)$ 1.577 1.000 1.428 1.015 1.365 1.000
Neighboring total employment $(2001)$ 1.664 1.464 0.660 1.405 0.684 1.506
Neighboring total employment $(2007)$ 0.649 1.494 0.605 1.495 0.004 1.600 Neighboring total employment $(2007)$ 0.649 1.436 0.646 1.466 0.661 1.475
Naighboring residential population $(2007)$ 0.042 1.450 0.040 1.400 0.001 1.470 Naighboring residential population $(2004)$ 0.407 1.060 0.412 1.005 0.491 1.190
Neighboring residential population (2007) $0.407 = 1.000 = 0.412 = 1.000 = 0.421 = 1.120$

 $\begin{tabular}{ll} \textbf{Table A.7} Blancing tests based on 1-NNM algorithm for sales floor space (public transportation line zones) \end{tabular}$ 

	200	7-2012	200	7-2014	200	7-2016
Variable	Raw	Matched	Raw	Matched	Raw	Matched
Panel A: Standardized differences						
Annual sales (2004)	0.021	-0.027	-0.030	-0.023	0.070	0.004
Annual sales (2007)	0.068	0.005	0.025	0.026	0.176	0.037
Employees (2004)	0.069	0.026	0.024	0.030	0.130	0.009
Employees (2007)	0.104	0.037	0.090	0.048	0.192	0.045
Share of female workers (2004)	0.120	0.008	0.155	0.011	0.126	-0.108
Share of female workers (2007)	0.133	-0.007	0.157	-0.030	0.128	-0.105
Share of full-time workers (2004)	-0.008	0.019	-0.086	-0.001	-0.104	0.028
Share of full-time workers $(2007)$	-0.026	0.008	-0.061	-0.001	-0.125	-0.046
Sales floor space (2004)	0.133	0.028	0.124	0.031	0.219	0.014
Sales floor space (2007)	0.148	0.045	0.137	0.026	0.197	-0.021
Opening hours (2007)	-0.080	-0.085	-0.027	-0.046	0.118	-0.069
Parking lot dummy (2007)	-0.011	-0.026	-0.038	-0.009	-0.144	-0.011
Parking vehicles (2007)	0.120	0.059	0.130	0.067	0.262	0.030
Share of E-commerce (2007)	-0.095	0.085	-0.053	0.015	-0.090	0.022
Share of over-the-counter $(2007)$	0.145	0.013	0.145	-0.043	0.125	-0.057
Franchisee dummy (2007)	0.035	0.000	0.034	0.000	0.063	0.000
Large-scale retail stores dummy (2007)	0.172	0.000	0.141	0.006	0.191	0.000
Neighboring total employment (2004)	0.248	-0.015	0.268	-0.017	0.251	-0.028
Neighboring total employment (2007)	0.262	-0.006	0.282	-0.007	0.264	-0.020
Neighboring residential population (2004)	0.240	-0.038	0.250	-0.057	0.232	-0.073
Neighboring residential population (2007)	0.248	-0.032	0.258	-0.050	0.240	-0.066
Panel B: Variance ratio						
Annual sales (2004)	1.175	1.213	1.133	1.174	1.039	1.224
Annual sales $(2007)$	1.157	1.216	1.118	1.171	0.869	1.524
Employees (2004)	1.124	1.199	1.060	1.272	0.943	1.470
Employees (2007)	1.153	1.206	1.061	1.228	0.941	1.499
Share of female workers (2004)	1.027	1.136	1.027	1.157	0.946	1.111
Share of female workers (2007)	0.999	1.128	0.958	1.162	0.949	1.172
Share of full-time workers (2004)	1.001	1.042	0.924	0.996	0.974	1.109
Share of full-time workers (2007)	0.947	1.043	0.912	1.030	0.871	0.967
Sales floor space (2004)	1.169	1.137	1.099	1.152	1.024	1.286
Sales floor space (2007)	1.103	1.105	1.026	1.107	1.008	1.237
Opening hours (2007)	0.923	1.317	1.106	1.254	1.623	1.322
Parking lot dummy (2007)	0.997	0.991	0.985	0.996	0.930	0.993
Parking vehicles (2007)	1.216	1.072	1.122	1.066	1.047	1.022
Share of E-commerce (2007)	0.014	0.000	0.349	1.050	0.326	1.593
Share of over-the-counter (2007)	0.845	1.048	0.860	1.134	0.800	1.073
Franchisee dummy (2007)	1 231	1 000	1 229	1 000	1 331	1 000
Large-scale retail stores dummy (2007)	1.610	1.000	1.463	1.015	1.293	1.000
Neighboring total employment (2004)	0.654	1.484	0.667	1.548	0.694	1.568
Neighboring total employment (2004)	0.633	1 454	0.645	1.510 1.520	0.001 0.672	1.500 1.541
Neighboring residential population (2004)	0.000	1.101	0.013 0.407	1 151	0.012 0.427	1 190
Neighboring residential population (2007)	0.395	1.075	0.402	1.150	0.422	1.188

Table A.8 Blancing tests based on 1	-NNM algorithm for employees (	public transportation line zones)
		1 1 /

Table 71.6 Dianeing tests based on 1-101010 a	$\frac{1}{2007} \frac{2012}{2017} \frac{2007}{2014} \frac{2007}{200} \frac{200}{200} \frac{200}{200$					
Variable	Raw	Matched	Raw	Matched	Raw	Matched
Panel A: Standardized differences						
Annual sales (2004)	0.034	-0.023	-0.020	-0.042	-0.002	-0.064
Annual sales (2007)	0.065	-0.006	0.020	-0.012	0.038	-0.035
Employees $(2004)$	0.083	0.011	0.025	-0.004	0.046	-0.020
Employees (2007)	0.000	0.011	0.020 0.076	0.014	0.040	0.003
Share of female workers (2004)	0.100	-0.015	0.010	0.004	0.005	-0.017
Share of female workers (2004)	0.000	-0.019	0.110	0.000	0.131 0.143	-0.017
Share of full time workers (2004)	0.000	-0.002	0.150	0.004	0.145	-0.017
Share of full time workers (2004)	-0.022	0.021	-0.005	0.001	-0.004	-0.023
Sales floor space (2004)	-0.001	0.024	-0.042	0.007	-0.038	-0.029
Sales floor space (2004)	0.152 0.142	0.029	0.112 0.121	-0.000	0.150 0.152	-0.051
Sales noor space $(2007)$	0.143	0.049	0.131	0.014	0.155	-0.008
Opening hours (2007)	-0.009	-0.049	-0.031	-0.076	-0.021	-0.078
Parking lot dummy (2007)	-0.070	-0.018	-0.039	-0.003	-0.057	0.000
Parking vehicles (2007)	0.144	0.043	0.116	0.041	0.154	0.021
Share of E-commerce (2007)	-0.062	0.012	-0.066	0.014	-0.062	0.012
Share of over-the-counter (2007)	0.123	-0.015	0.126	-0.005	0.145	-0.028
Franchisee dummy (2007)	0.038	0.000	0.019	0.000	0.039	0.000
Large-scale retail stores dummy $(2007)$	0.117	0.000	0.137	0.000	0.133	0.000
Neighboring total employment $(2004)$	0.232	-0.029	0.262	-0.008	0.243	-0.005
Neighboring total employment $(2007)$	0.245	-0.020	0.276	0.002	0.256	0.003
Neighboring residential population (2004)	0.222	-0.059	0.246	-0.030	0.227	-0.034
Neighboring residential population (2007)	0.229	-0.053	0.254	-0.024	0.234	-0.028
<b>Panel B</b> : Variance ratio						
Annual sales (2004)	1.086	1.160	1.107	1.134	1.051	1.146
Annual sales (2007)	1.115	1.177	1.126	1.161	1.094	1.162
Employees (2004)	1.104	1.143	1.081	1.228	1.075	1.281
Employees (2007)	1.134	1.145	1.087	1.167	1.098	1.214
Share of female workers (2004)	1.012	1.137	1.050	1.127	1.028	1.133
Share of female workers (2007)	0.972	1.089	1.016	1.112	1.002	1.117
Share of full-time workers $(2004)$	0.988	1.056	0.967	1.048	0.977	1.057
Share of full-time workers (2007)	0.915	1.077	0.935	1.060	0.946	1.041
Sales floor space (2004)	1.135	1.117	1.130	1.167	1.138	1.178
Sales floor space (2007)	1.075	1.086	1.069	1.153	1.082	1.192
Opening hours (2007)	1.119	1.259	1.005	1.236	1.051	1.262
Parking lot dummy (2007)	0.980	0.994	0.985	0.998	0.975	1.000
Parking vehicles (2007)	1.176	1.060	1 097	1 045	1.150	1 041
Share of E-commerce (2007)	0.220	1.000	0.253	1.010	0.311	1.041
Share of over-the-counter (2007)	0.220	1.001	0.200	1.068	0.855	1 146
Franchisee dummy (2007)	1 231	1.000	1.197	1.000	1.266	1.140
Large geals retail stores dummy (2007)	1.201 1.244	1.000	1.127 1.457	1.000	1.200 1.446	1.000
Noighboring total apploament (2004)	1.344	1.000	1.407	1 512	1.440	1 400
Noighboring total employment (2004)	0.000	1.400	0.070	1.010	0.097	1.499 1.471
Noighboring regidential population (2004)	0.034	1.400	0.047	1.401 1 107	0.070	1.44/1
Noighboring residential population (2004)	0.400	1.107	0.410	1.127	0.405	1.140
meignooring residential population (2007)	0.390	1.100	0.400	1.124	0.420	1.141

**Table A.9** Blancing tests based on 1-NNM algorithm for annual sales per sales floor space (publictransportation line zones)

	2007 - 2012		2007 - 2014		2007 - 2016	
Variable	Raw	Matched	Raw	Matched	Raw	Matched
Panel A: Standardized differences						
Annual sales (2004)	0.021	-0.031	-0.024	-0.019	0.093	0.003
Annual sales (2007)	0.071	0.007	0.028	0.028	0.199	0.039
Employees (2004)	0.070	0.028	0.018	0.018	0.140	0.003
Employees (2007)	0.109	0.037	0.090	0.044	0.206	0.040
Share of female workers (2004)	0.112	0.009	0.151	0.017	0.117	-0.086
Share of female workers (2007)	0.128	0.006	0.155	-0.026	0.117	-0.087
Share of full-time workers (2004)	-0.009	0.000	-0.093	-0.008	-0.087	0.032
Share of full-time workers (2007)	-0.028	-0.003	-0.065	-0.003	-0.110	-0.025
Sales floor space (2004)	0.135	0.025	0.119	0.018	0.236	0.001
Sales floor space (2007)	0.153	0.045	0.138	0.020	0.203	-0.033
Opening hours (2007)	-0.082	-0.081	-0.029	-0.045	0.120	-0.057
Parking lot dummy (2007)	-0.007	-0.020	-0.053	-0.017	-0.160	-0.021
Parking vehicles (2007)	0.116	0.054	0.137	0.064	0.283	0.036
Share of E-commerce (2007)	-0.095	0.085	-0.053	0.015	-0.091	0.022
Share of over-the-counter (2007)	0.159	0.012	0.153	-0.043	0.116	-0.058
Franchisee dummy (2007)	0.035	0.000	0.044	0.000	0.060	0.000
Large-scale retail stores dummy (2007)	0.172	0.000	0.129	0.006	0.181	0.000
Neighboring total employment (2004)	0.235	-0.023	0.242	0.002	0.293	0.103
Neighboring total employment (2007)	0.249	-0.013	0.257	0.012	0.303	0.107
Neighboring residential population (2004)	0.229	-0.044	0.238	0.004	0.236	0.070
Neighboring residential population (2007)	0.237	-0.039	0.247	0.011	0.244	0.075
Panel B: Variance ratio						
Annual sales (2004)	1.180	1.215	1.086	1.142	1.027	1.213
Annual sales $(2007)$	1.149	1.191	1.075	1.140	0.870	1.462
Employees (2004)	1.106	1.186	1.058	1.262	0.949	1.422
Employees (2007)	1.128	1.192	1.053	1.196	0.942	1.428
Share of female workers (2004)	1.026	1.141	1.037	1.145	0.957	1.131
Share of female workers (2007)	0.996	1.024	0.963	1.155	0.968	1.192
Share of full-time workers $(2004)$	0.984	1.038	0.920	0.983	0.992	1.124
Share of full-time workers (2007)	0.947	1.135	0.907	1.203	0.881	1.005
Sales floor space (2004)	1.149	1.135	1.080	1.124	1.066	1.266
Sales floor space (2007)	1.084	1.109	1.022	1.097	1.047	1.216
Opening hours (2007)	0.893	1.275	1.073	1.257	1.611	1.302
Parking lot dummy (2007)	0.999	0.993	0.978	0.992	0.920	0.985
Parking vehicles (2007)	1.208	1.064	1.105	1.039	1.069	1.013
Share of E-commerce (2007)	0.014	0.000	0.346	1.050	0.323	1.593
Share of over-the-counter (2007)	0.818	1.053	0.849	1.150	0.808	1.072
Franchisee dummy (2007)	1.236	1.000	1.292	1.000	1.315	1.000
Large-scale retail stores dummy (2007)	1.610	1.000	1.420	1.015	1.274	1.000
Neighboring total employment (2004)	0.655	1.468	0.667	1.489	0.826	1.587
Neighboring total employment (2007)	0.633	1.440	0.645	1.458	0.798	1.552
Neighboring residential population (2004)	0.401	1.070	0.411	1.105	0.510	1.235
Neighboring residential population (2007)	0.396	1.067	0.405	1.100	0.501	1.221

**Table A.10** Blancing tests based on 1-NNM algorithm for annual sales per employee (public transportation line zones)

	2007 - 2012		2007 - 2014		2007 - 2016	
Variable	Raw	Matched	Raw	Matched	Raw	Matched
Panel A: Standardized differences						
Annual sales (2004)	0.022	-0.014	-0.006	-0.026	0.002	-0.045
Annual sales (2007)	0.076	0.031	0.048	0.028	0.046	-0.007
Employees (2004)	0.062	0.029	0.031	0.024	0.053	-0.003
Employees (2007)	0.106	0.045	0.094	0.044	0.105	0.015
Share of female workers (2004)	0.107	-0.004	0.141	0.009	0.133	-0.027
Share of female workers (2007)	0.127	0.006	0.155	-0.015	0.149	-0.015
Share of full-time workers $(2004)$	-0.025	0.017	-0.083	-0.019	-0.067	-0.007
Share of full-time workers (2007)	-0.049	0.012	-0.050	-0.008	-0.034	-0.003
Sales floor space (2004)	0.119	0.032	0.125	0.021	0.135	-0.003
Sales floor space (2007)	0.146	0.049	0.144	0.022	0.154	0.012
Opening hours (2007)	-0.056	-0.083	-0.017	-0.049	-0.022	-0.063
Parking lot dummy (2007)	-0.018	-0.038	-0.058	-0.016	-0.070	0.000
Parking vehicles (2007)	0.117	0.071	0.138	0.061	0.162	0.034
Share of E-commerce (2007)	-0.095	0.091	-0.062	0.015	-0.062	0.012
Share of over-the-counter (2007)	0.158	0.015	0.142	-0.034	0.150	-0.017
Franchisee dummy (2007)	0.042	0.000	0.035	0.000	0.037	0.000
Large-scale retail stores dummy (2007)	0.166	0.000	0.131	0.006	0.115	0.000
Neighboring total employment (2004)	0.234	-0.011	0.252	0.005	0.249	-0.005
Neighboring total employment (2007)	0.248	-0.001	0.266	0.015	0.263	0.004
Neighboring residential population (2004)	0.228	-0.033	0.247	0.005	0.232	-0.034
Neighboring residential population (2007)	0.236	-0.026	0.256	0.011	0.240	-0.027
Panel B: Variance ratio						
Annual sales (2004)	1.149	1.201	1.065	1.137	1.052	1.144
Annual sales $(2007)$	1.130	1.191	1.041	1.114	1.078	1.144
Employees $(2004)$	1.111	1.198	1.072	1.255	1.057	1.254
Employees (2007)	1.142	1.212	1.075	1.223	1.081	1.209
Share of female workers (2004)	1.031	1.139	1.035	1.120	1.028	1.180
Share of female workers (2007)	1.001	1.090	0.963	1.130	0.978	1.135
Share of full-time workers (2004)	0.981	1.033	0.936	0.997	0.955	1.036
Share of full-time workers (2007)	0.930	1.053	0.919	1.039	0.929	1.045
Sales floor space (2004)	1.142	1.130	1.137	1.148	1.134	1.181
Sales floor space (2007)	1.082	1.133	1.053	1.106	1.065	1.175
Opening hours (2007)	0.983	1.286	1.102	1.288	0.996	1.432
Parking lot dummy (2007)	0.994	0.986	0.975	0.992	0.967	1.000
Parking vehicles (2007)	1.192	1.062	1.103	1.036	1.142	1.057
Share of E-commerce (2007)	0.020	57.056	0.265	1.050	0.293	1.041
Share of over-the-counter (2007)	0.820	1 057	0.200	1 106	0.848	1.011 1 135
Franchisee dummy (2007)	1.285	1.000	1.231	1.000	1.251	1.000
Large-scale retail stores dummy (2007)	1.200 1.590	1.000	1.201 1 434	1.000 1 015	1.201 1.384	1.000
Neighboring total employment (2004)	0.664	1.000 1 464	0.669	1 495	0.684	1.506
Neighboring total employment (2004)	0.642	1 436	0.646	1 466	0.661	1.000 1 475
Neighboring residential population (2004)	0.012 0.407	1.100	0.010 0.412	1.100	0.001	1 1 2 9
Neighboring residential population (2004)	0.402	1.005	0.406	1.000	0.416	1.125 1 125
Trans trans representation (2001)	0.101	1.000	0.100	1.001	0.110	<b>T</b> · <b>TD</b> O