Entry liberalization and price competition in the Portuguese over-the-counter drug market

Supplementary Material

Ana Moura[a] and Pedro Pita Barros[b]

[a]Tilburg University

[b]Nova School of Business and Economics

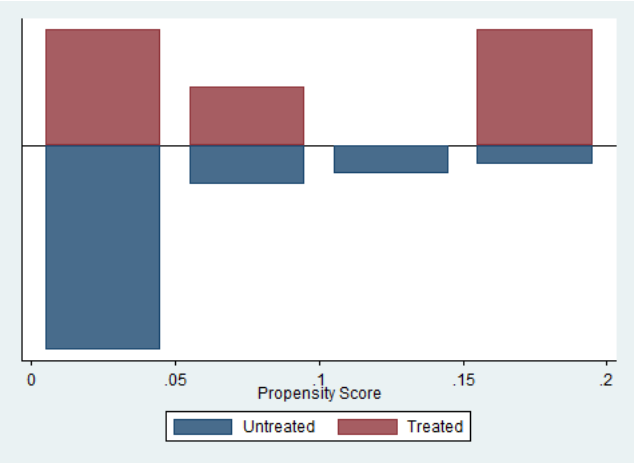
Abstract

This document contains supplementary material to the paper entitled "Entry liberalization and price competition in the Portuguese over-the-counter drug market". Section 1 provides plots showing that in none of our PSM-DID specifications are there issues of lack of support. Section 2 provides covariate balancing checks. More specifically, we show the standardized % bias across covariates in both the unmatched and matched samples, for each of the PSM procedures we run.

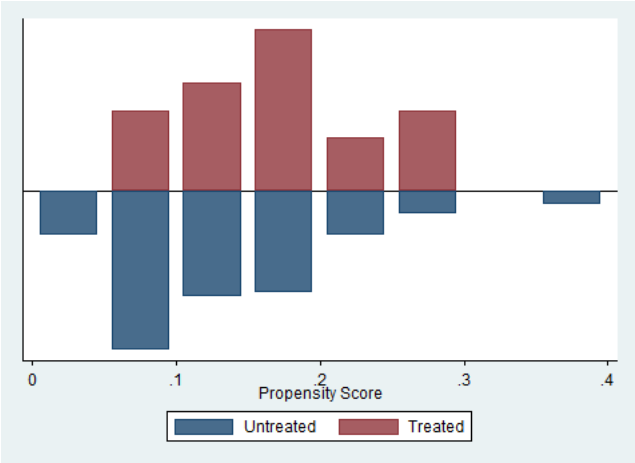
1 Common support for PSM-DID procedure

1.1 Competitors are the 5 single nearest neighbours of a retailer

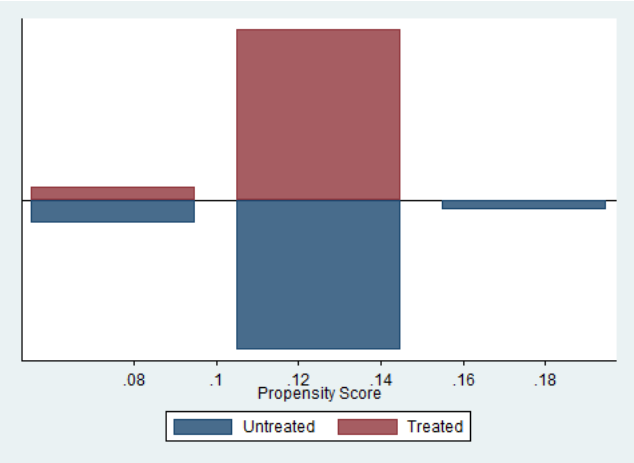
1.1.1 Using single nearest neighbour matching



(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

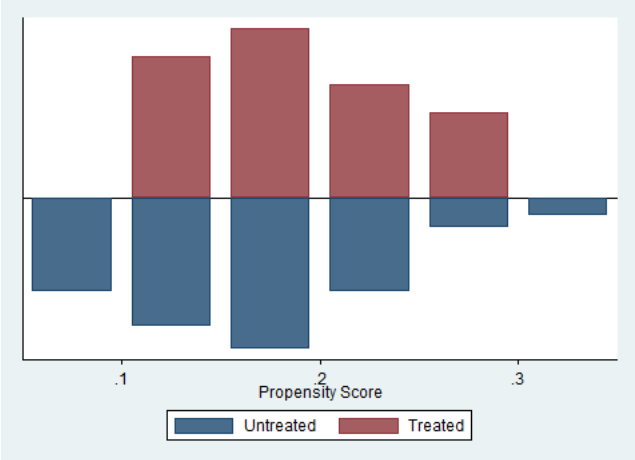


(c) Treatment: entry of outlet between 2006 and 2010

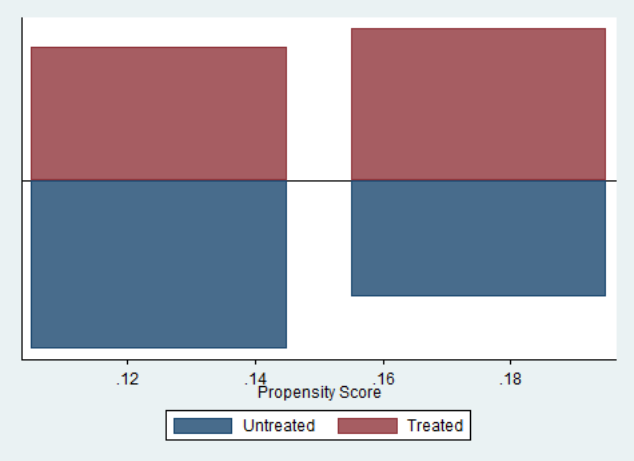
(d) Treatment: entry of outlet between 2010 and 2015

Figure 1: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2006, for each of the four treatment groups

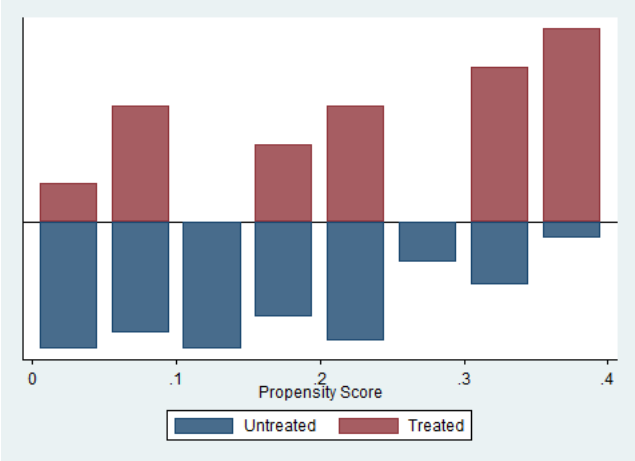
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

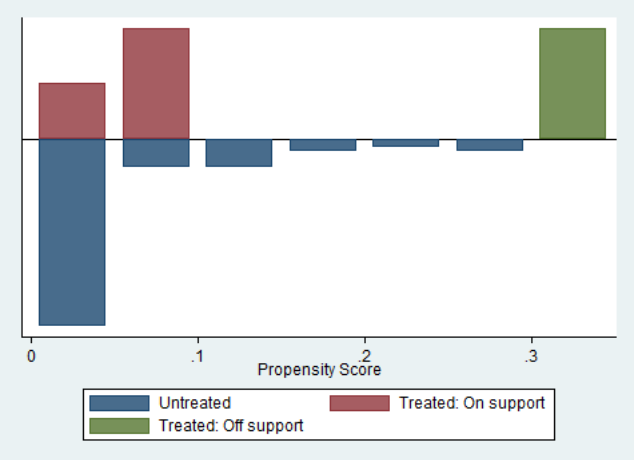


(c) Treatment: entry of outlet between 2006 and 2010



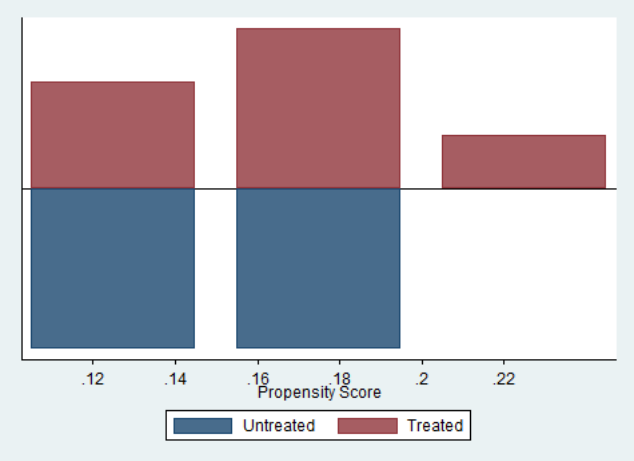
(d) Treatment: entry of outlet between 2010 and 2015

Figure 2: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2010, for each of the four treatment groups

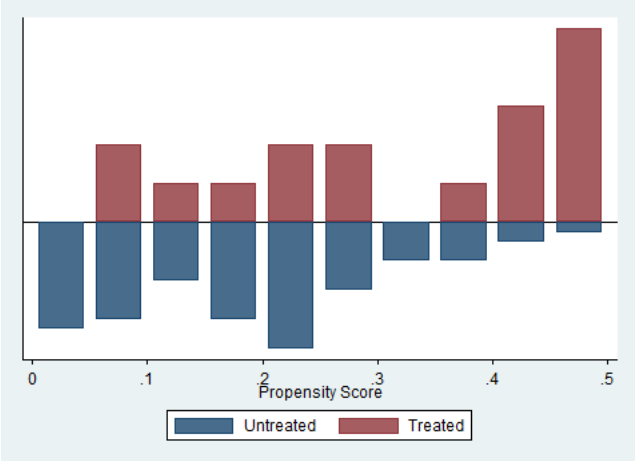


(a) Treatment: entry of supermarket between 2006 and 2010

(b) Treatment: entry of supermarket between 2010 and 2015



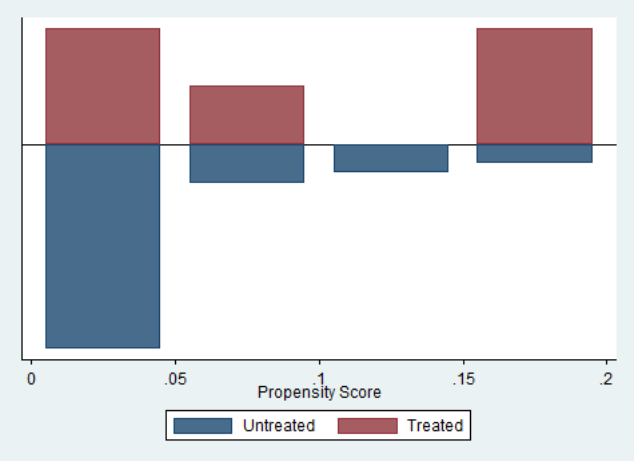
(c) Treatment: entry of outlet between 2006 and 2010



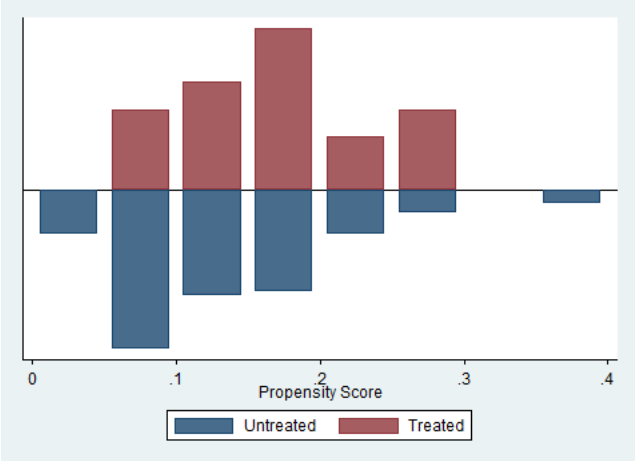
(d) Treatment: entry of outlet between 2010 and 2015

Figure 3: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2015, for each of the four treatment groups

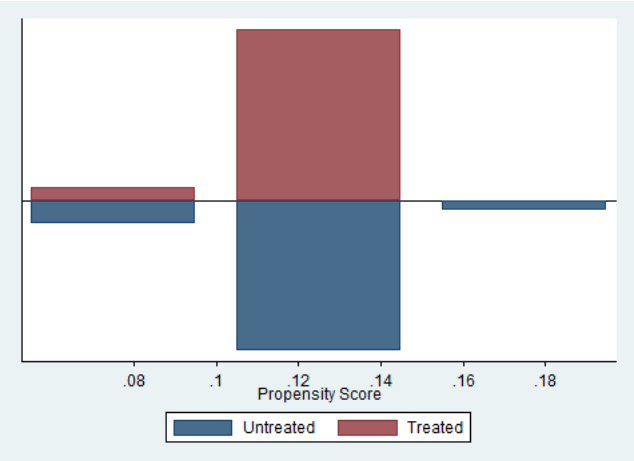
1.1.2 Using non-parametric local linear matching



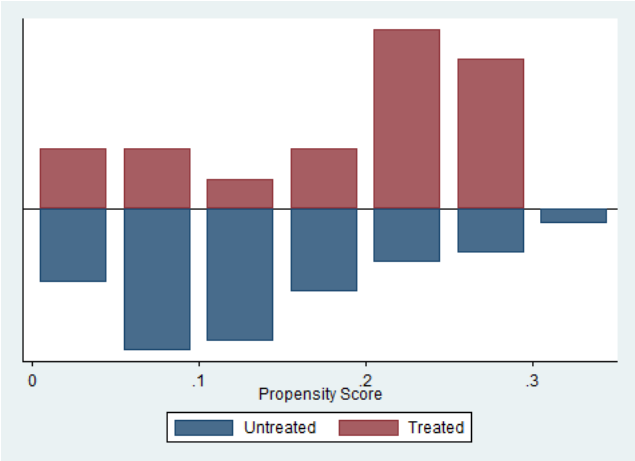
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



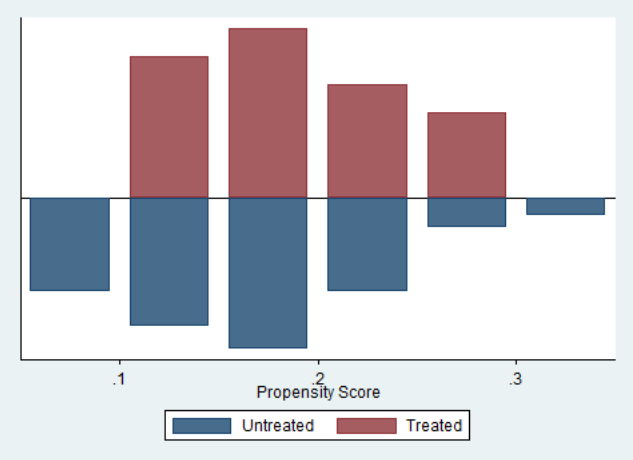
(c) Treatment: entry of outlet between 2006 and 2010



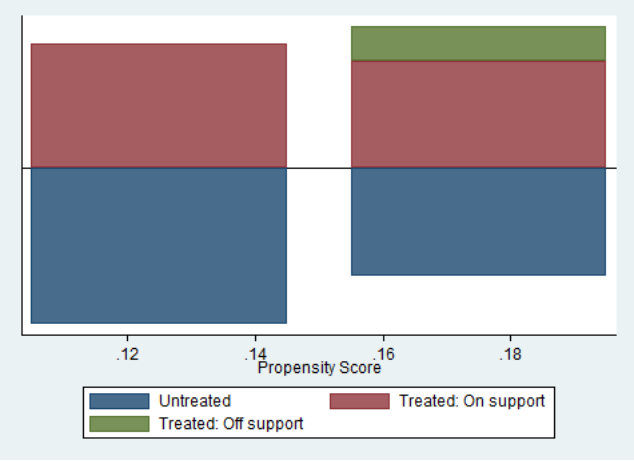
(d) Treatment: entry of outlet between 2010 and 2015

Figure 4: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2006, for each of the four treatment groups

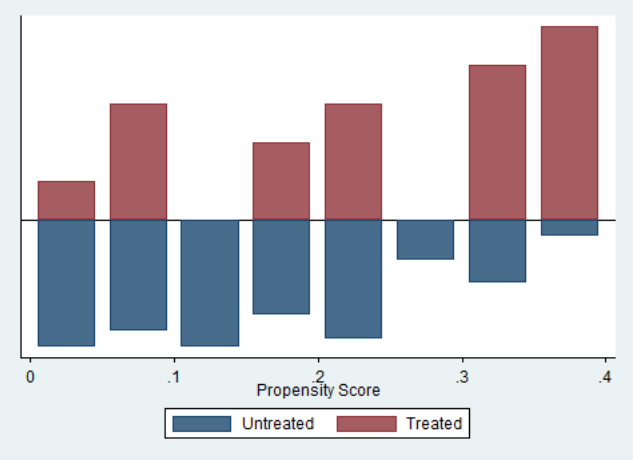
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

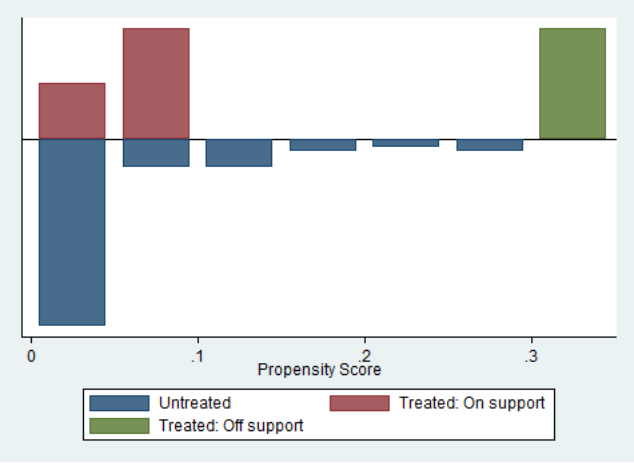


(c) Treatment: entry of outlet between 2006 and 2010

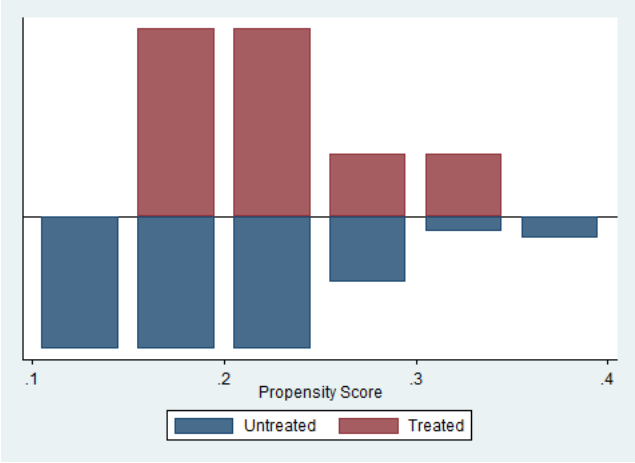


(d) Treatment: entry of outlet between 2010 and 2015

Figure 5: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2010, for each of the four treatment groups

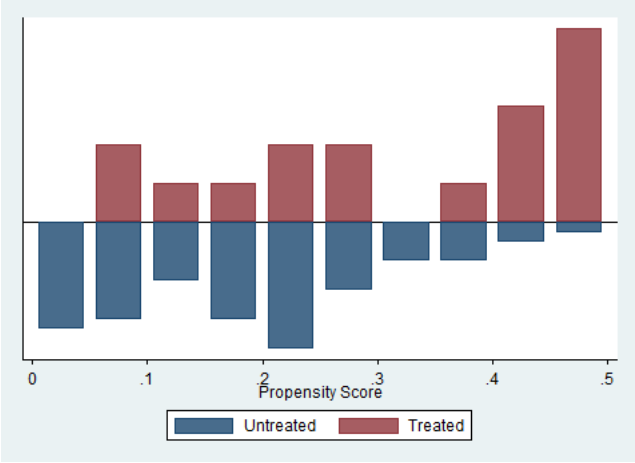


(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

(c) Treatment: entry of outlet between 2006 and 2010

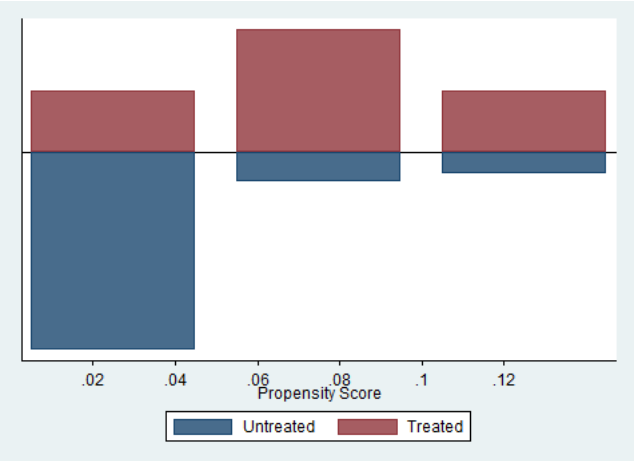


(d) Treatment: entry of outlet between 2010 and 2015

Figure 6: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2015, for each of the four treatment groups

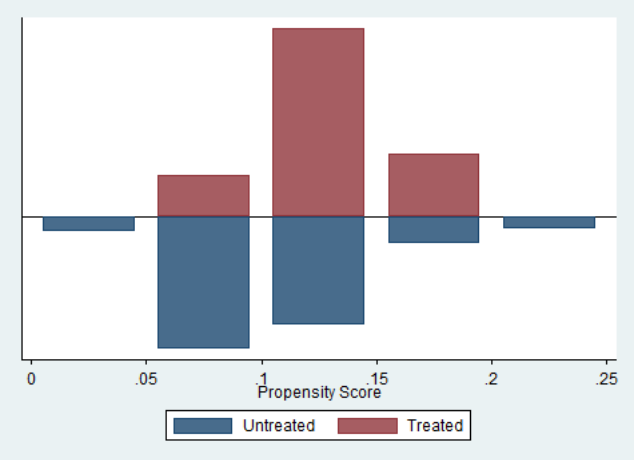
1.2 Competitors are all retailers located within a 400m radius

1.2.1 Using single nearest neighbour matching

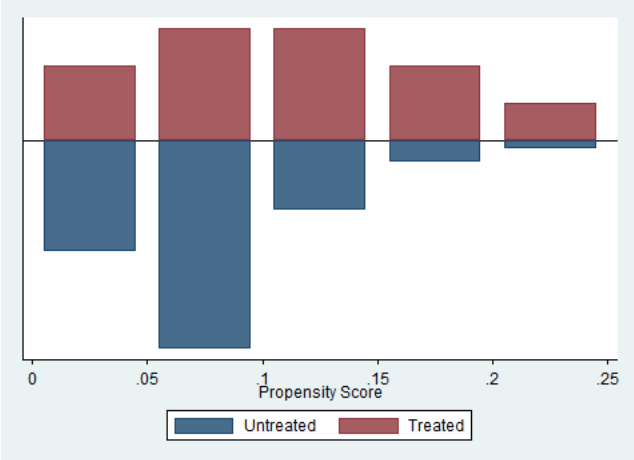


(a) Treatment: entry of supermarket between 2006 and 2010

(b) Treatment: entry of supermarket between 2010 and 2015



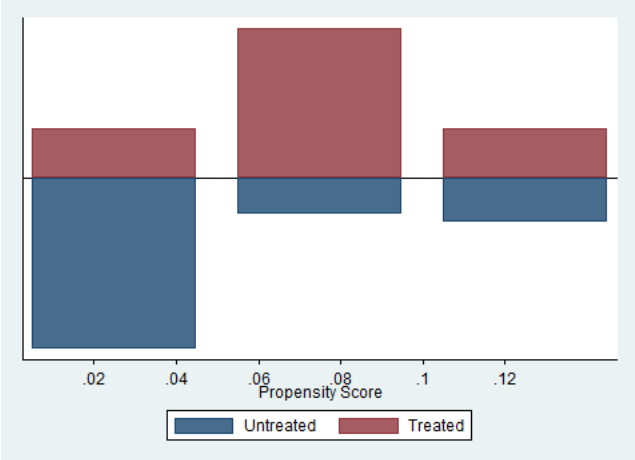
(c) Treatment: entry of outlet between 2006 and 2010



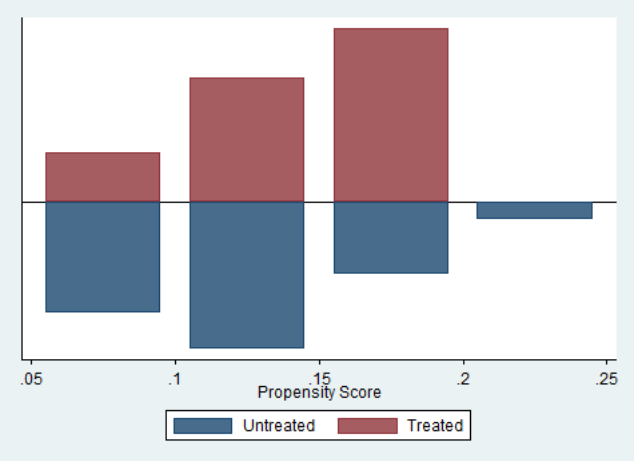
(d) Treatment: entry of outlet between 2010 and 2015

Figure 7: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2006, for each of the four treatment groups

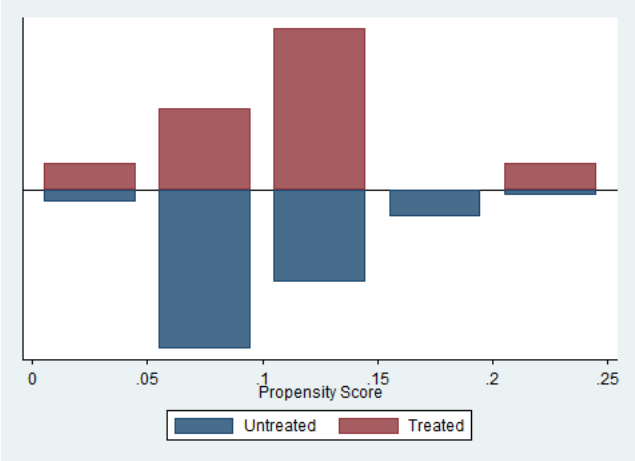
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

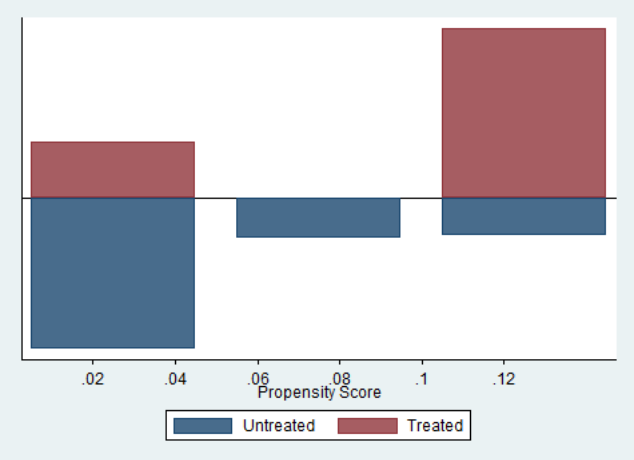


(c) Treatment: entry of outlet between 2006 and 2010

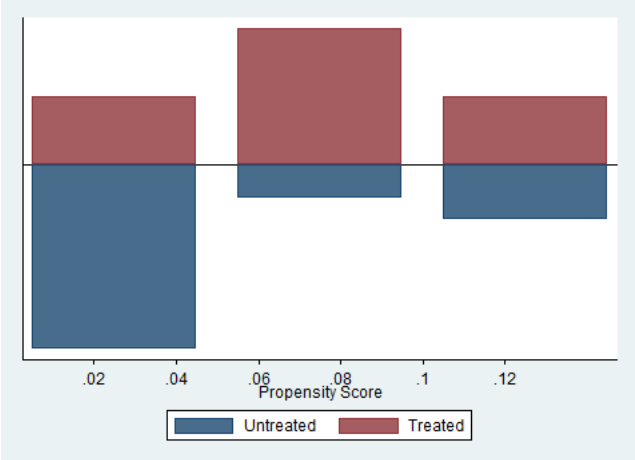


(d) Treatment: entry of outlet between 2010 and 2015

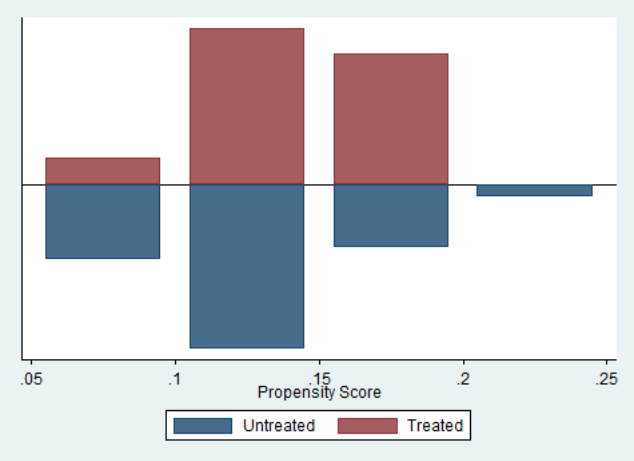
Figure 8: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2010, for each of the four treatment groups



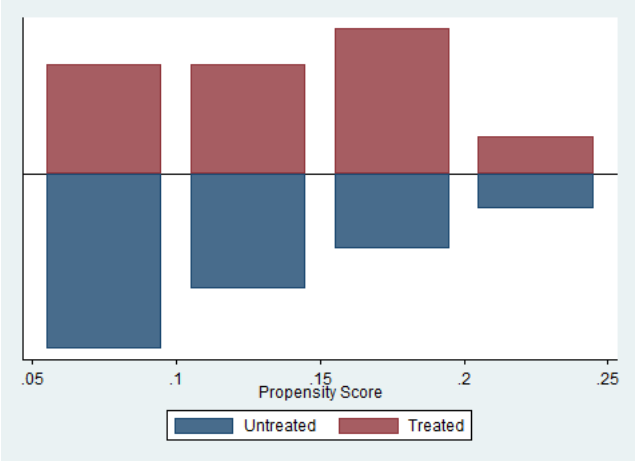
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



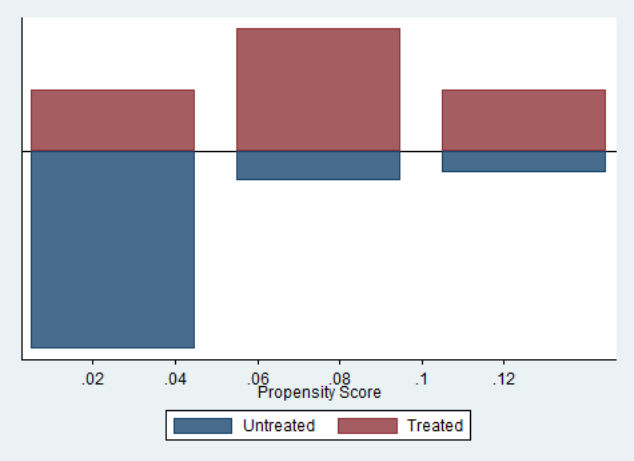
(c) Treatment: entry of outlet between 2006 and 2010



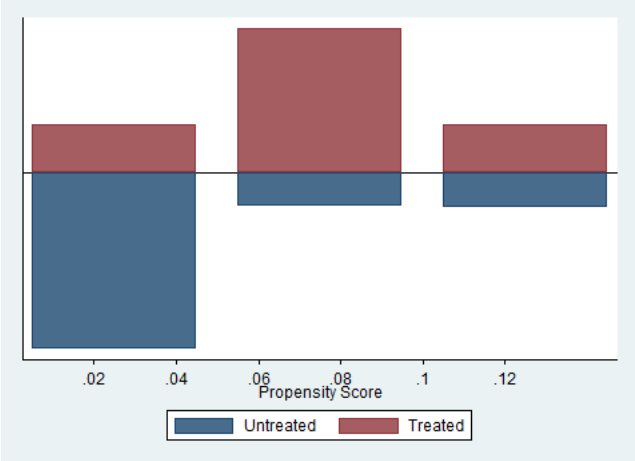
(d) Treatment: entry of outlet between 2010 and 2015

Figure 9: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2015, for each of the four treatment groups

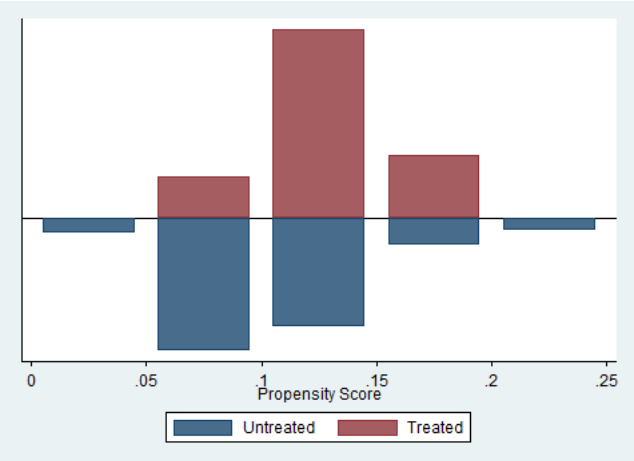
1.2.2 Using non-parametric local linear matching



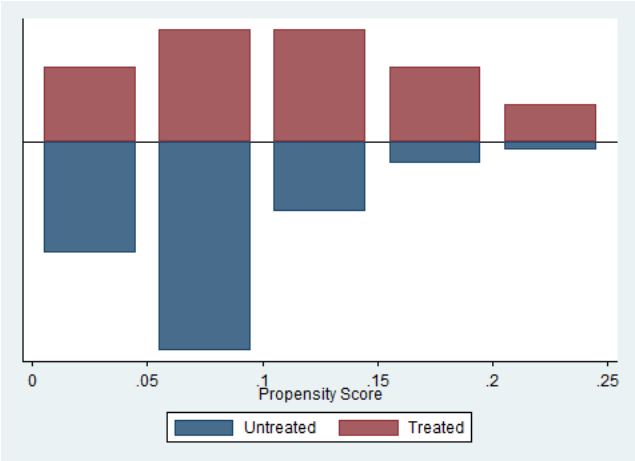
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



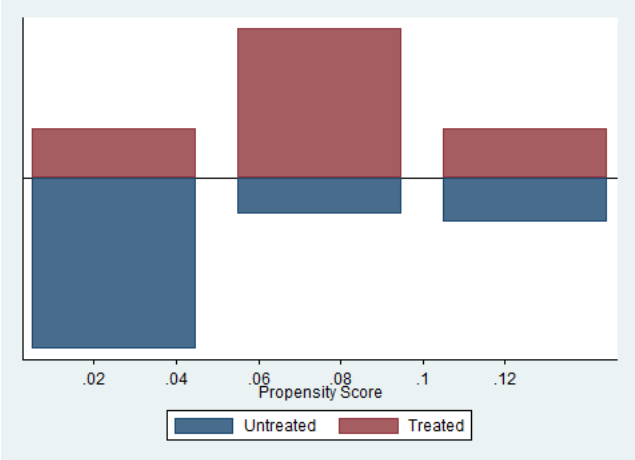
(c) Treatment: entry of outlet between 2006 and 2010



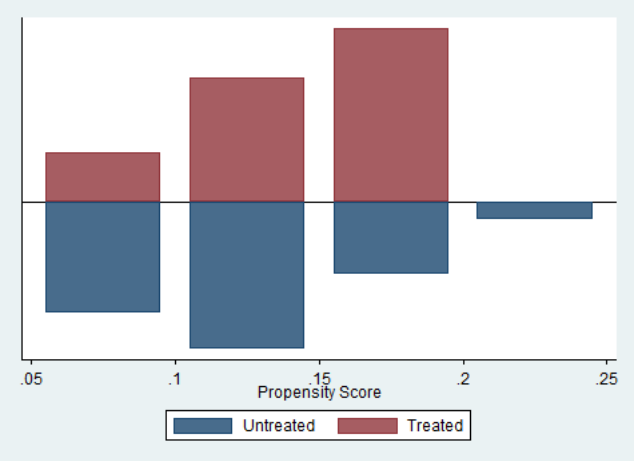
(d) Treatment: entry of outlet between 2010 and 2015

Figure 10: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2006, for each of the four treatment groups

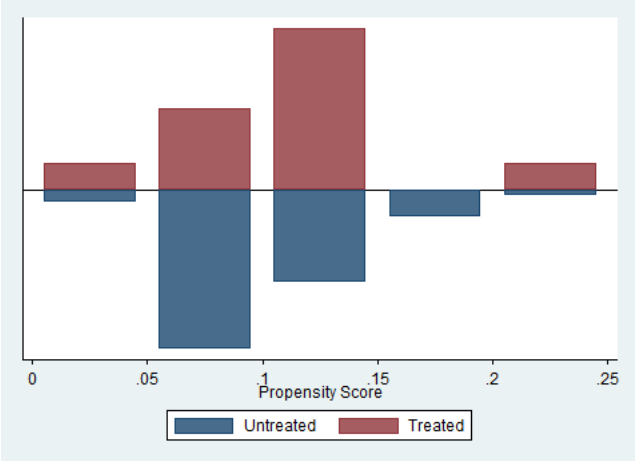
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

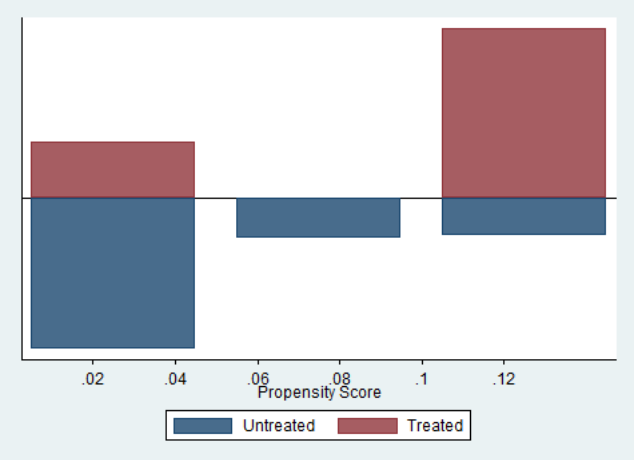


(c) Treatment: entry of outlet between 2006 and 2010

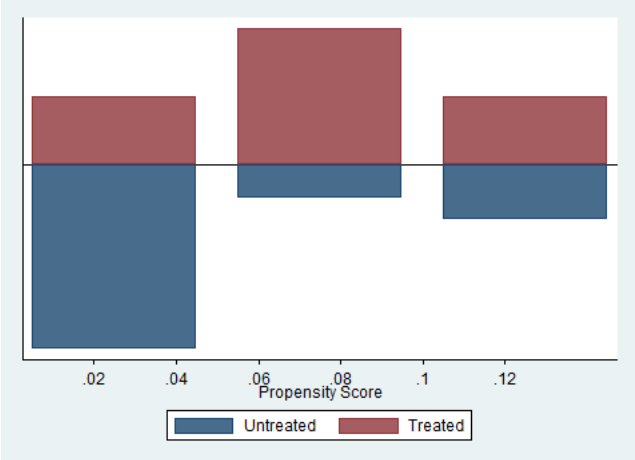


(d) Treatment: entry of outlet between 2010 and 2015

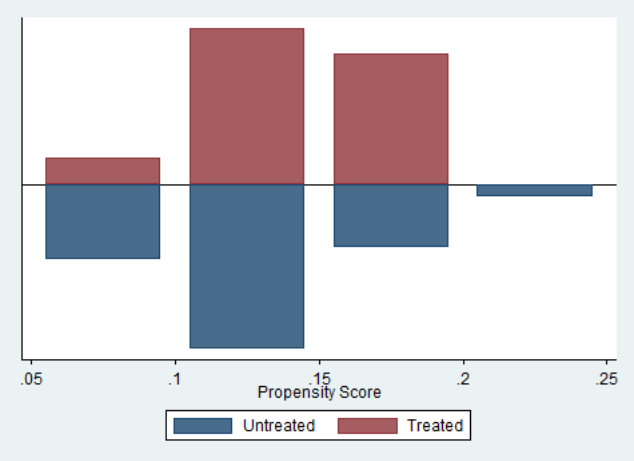
Figure 11: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2010, for each of the four treatment groups



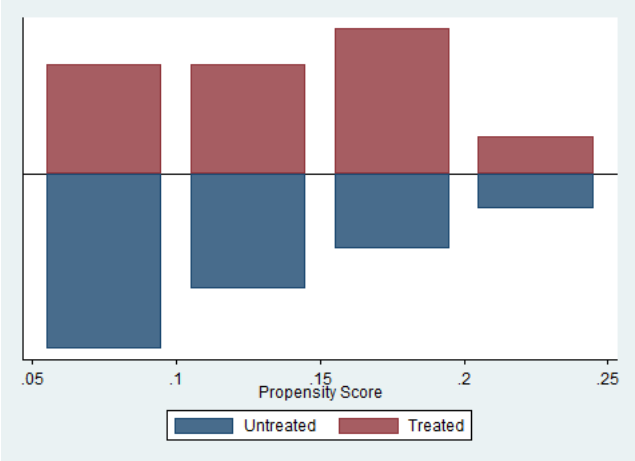
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



(c) Treatment: entry of outlet between 2006 and 2010

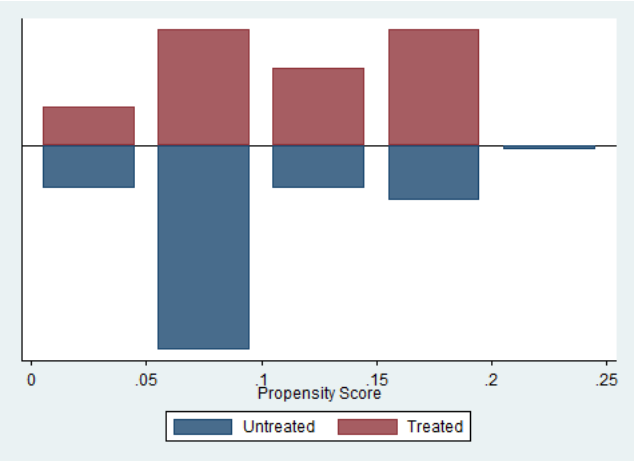


(d) Treatment: entry of outlet between 2010 and 2015

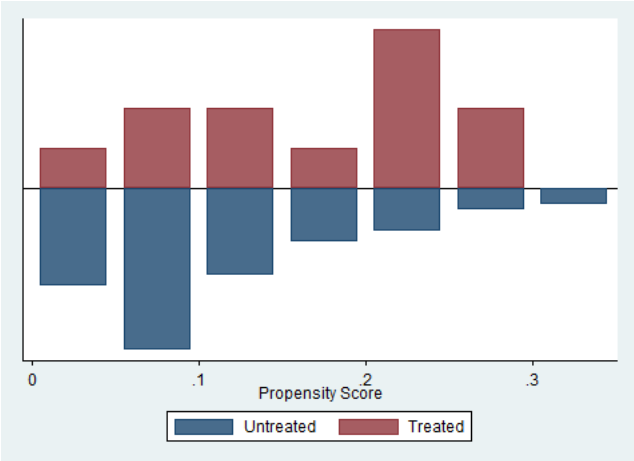
Figure 12: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2015, for each of the four treatment groups

1.3 Competitors are all retailers located within a 600m radius

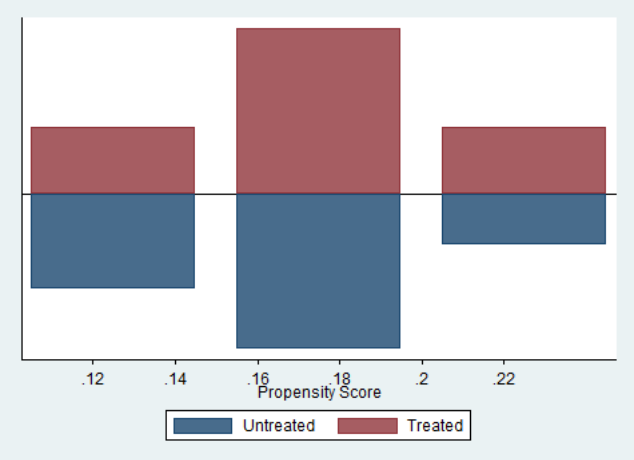
1.3.1 Using single nearest neighbour matching



(a) Treatment: entry of supermarket between 2006 and 2010



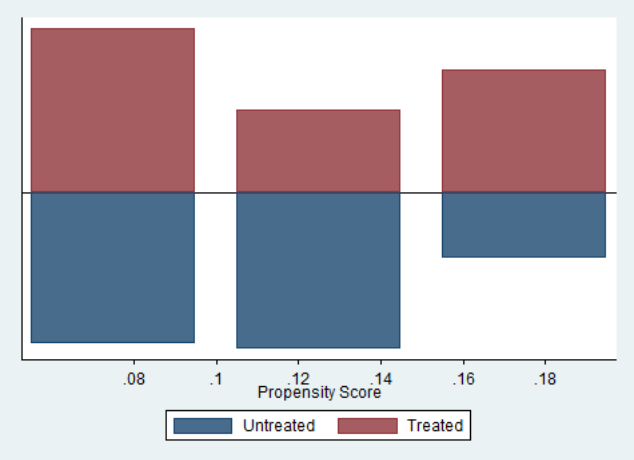
(b) Treatment: entry of supermarket between 2010 and 2015



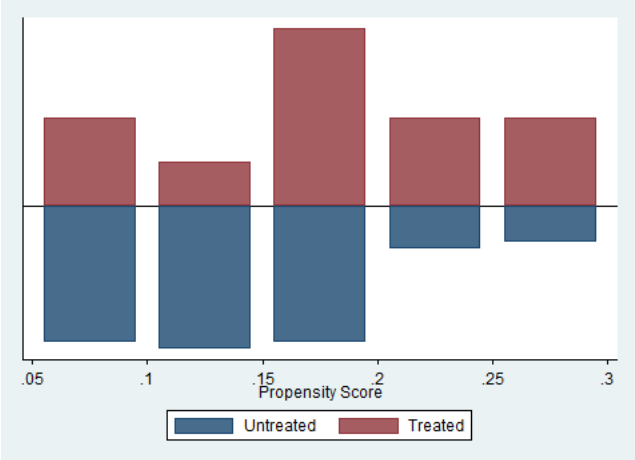
(c) Treatment: entry of outlet between 2006 and 2010

(d) Treatment: entry of outlet between 2010 and 2015

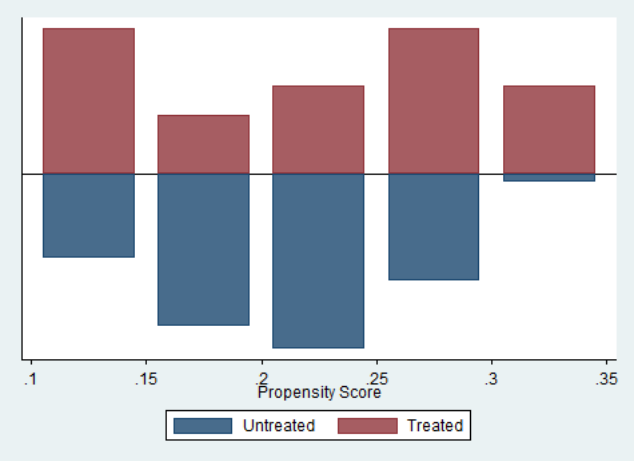
Figure 13: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2006, for each of the four treatment groups



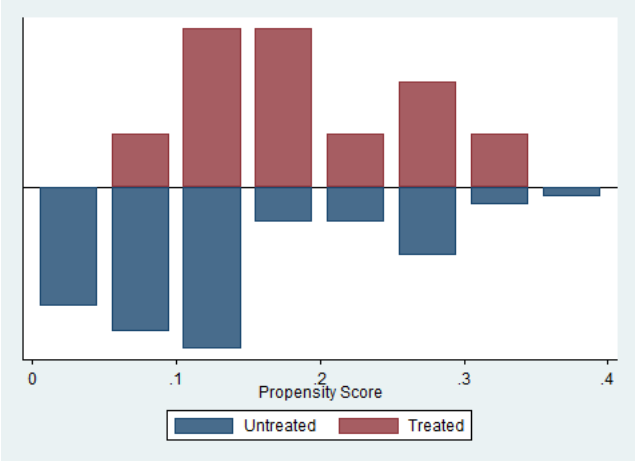
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

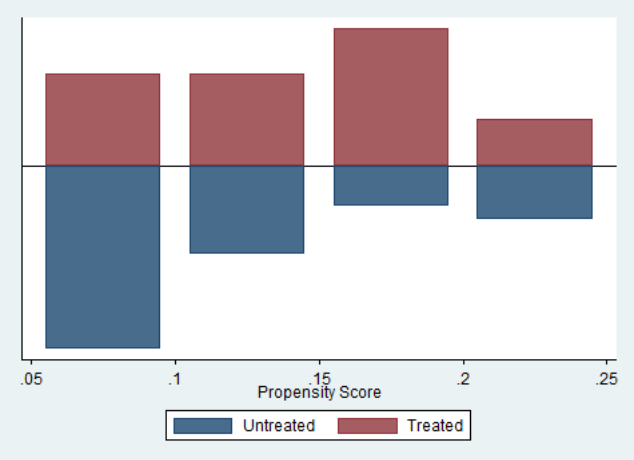


(c) Treatment: entry of outlet between 2006 and 2010

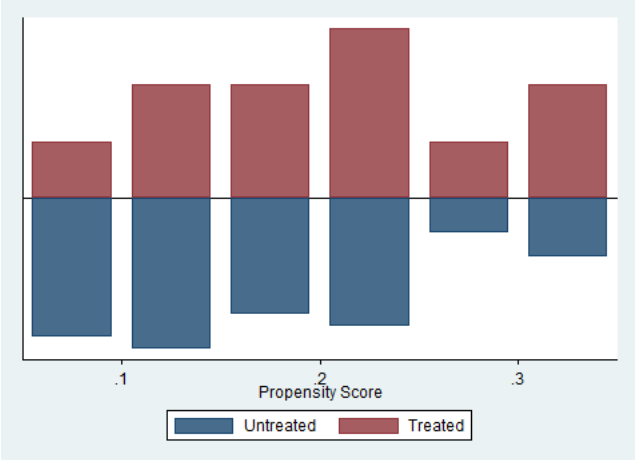


(d) Treatment: entry of outlet between 2010 and 2015

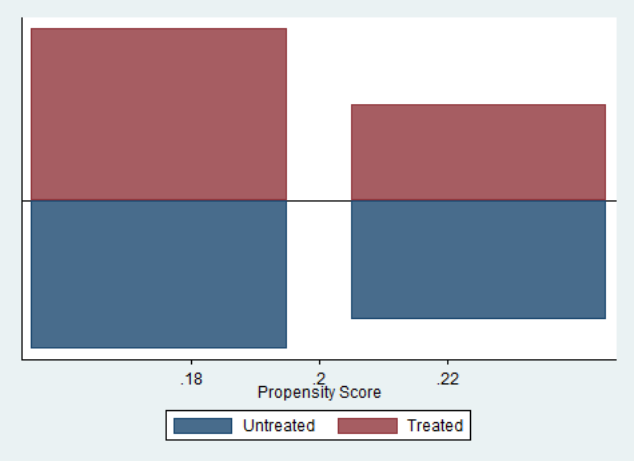
Figure 14: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2010, for each of the four treatment groups



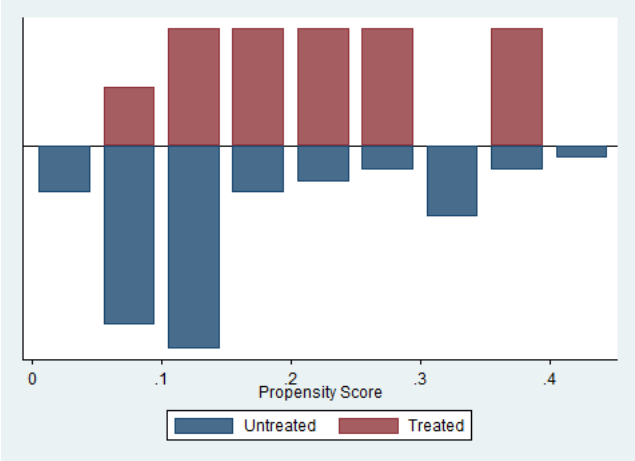
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



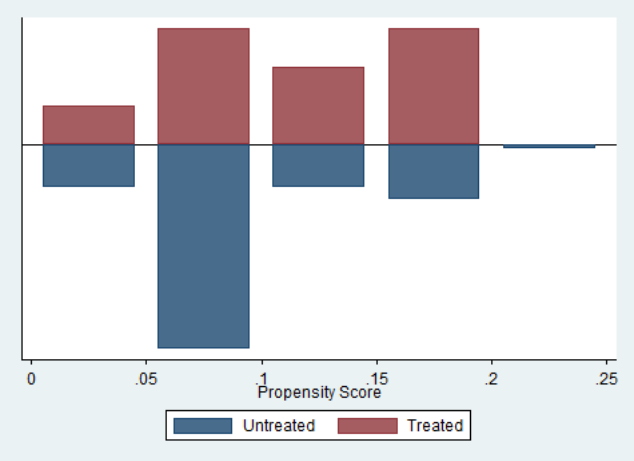
(c) Treatment: entry of outlet between 2006 and 2010



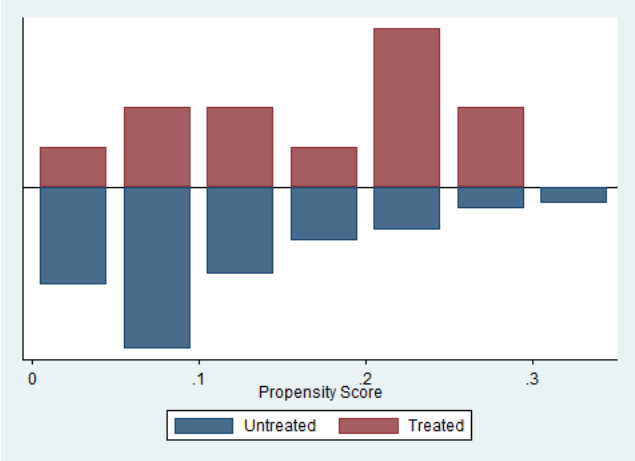
(d) Treatment: entry of outlet between 2010 and 2015

Figure 15: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2015, for each of the four treatment groups

1.3.2 Using non-parametric local linear matching

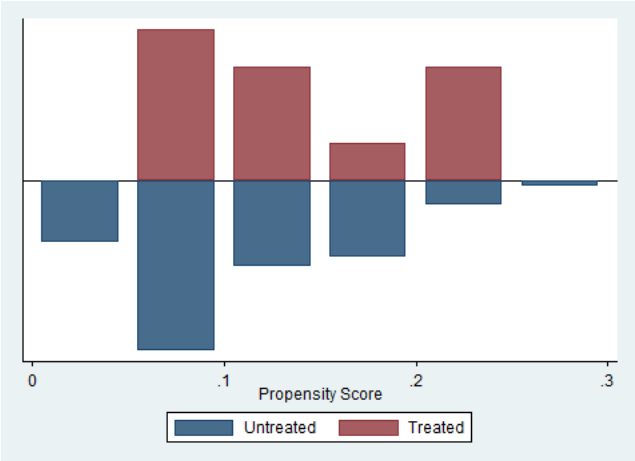


(a) Treatment: entry of supermarket between 2006 and 2010



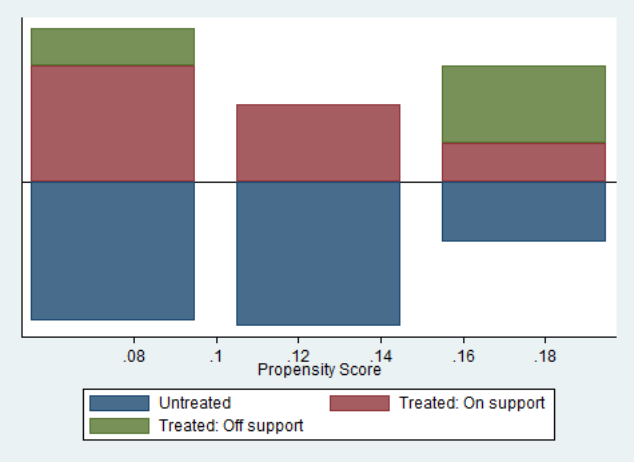
(b) Treatment: entry of supermarket between 2010 and 2015

(c) Treatment: entry of outlet between 2006 and 2010

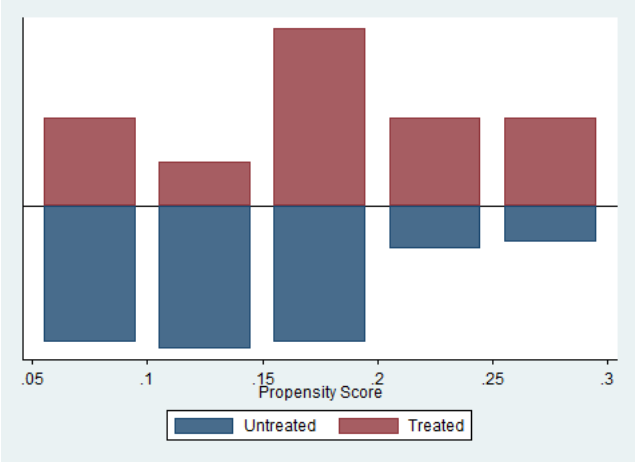


(d) Treatment: entry of outlet between 2010 and 2015

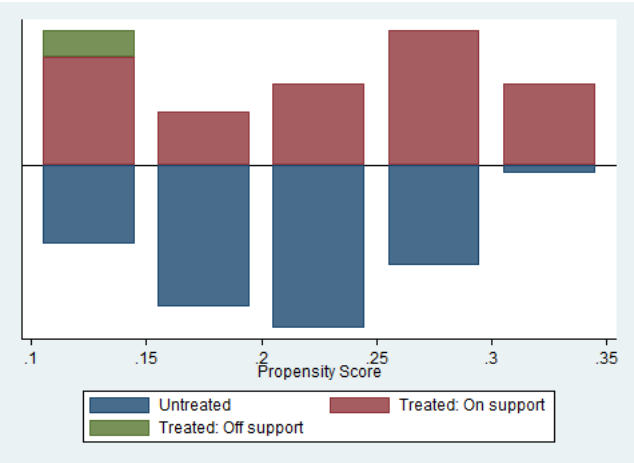
Figure 16: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2006, for each of the four treatment groups



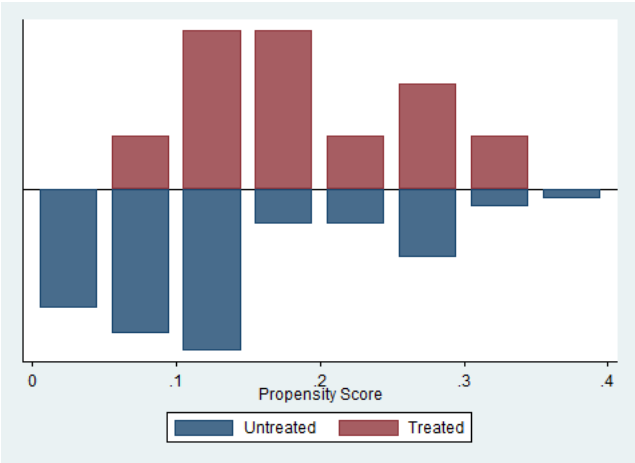
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

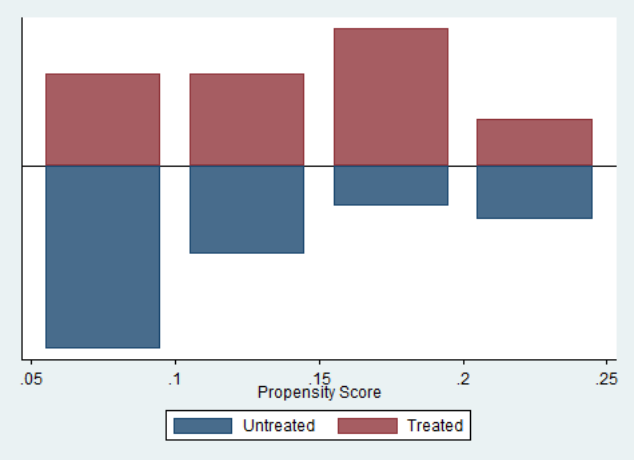


(c) Treatment: entry of outlet between 2006 and 2010

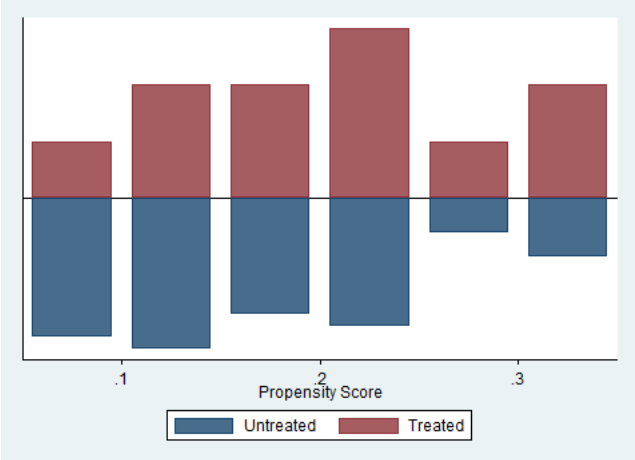


(d) Treatment: entry of outlet between 2010 and 2015

Figure 17: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2010, for each of the four treatment groups

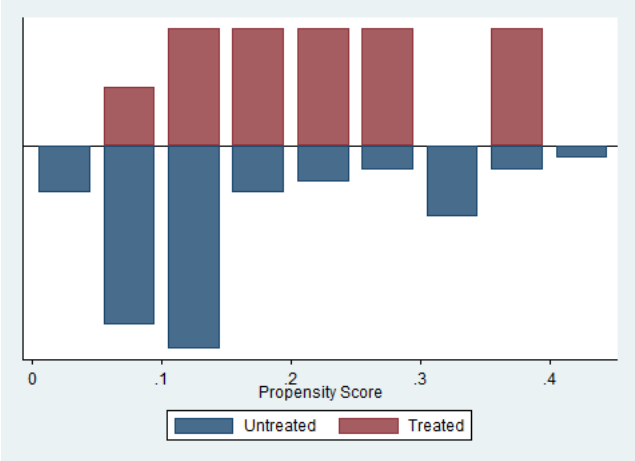


(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

(c) Treatment: entry of outlet between 2006 and 2010

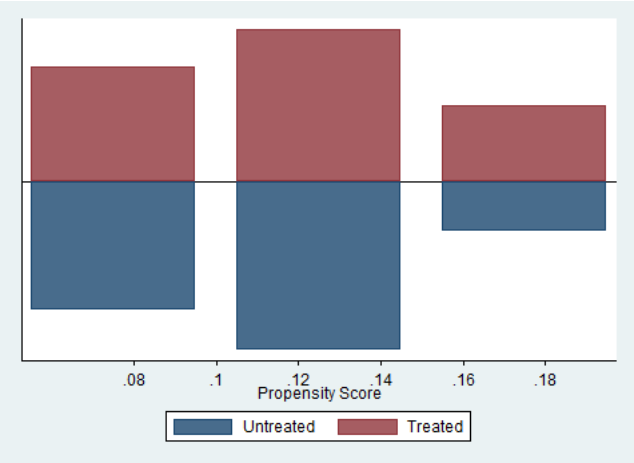


(d) Treatment: entry of outlet between 2010 and 2015

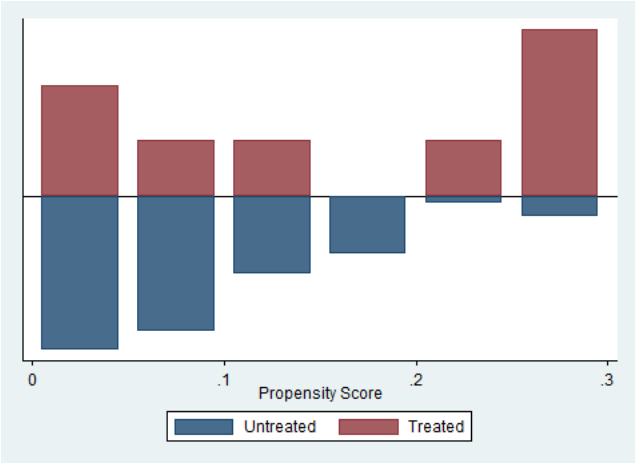
Figure 18: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2015, for each of the four treatment groups

1.4 Competitors are all retailers located within a 800m radius

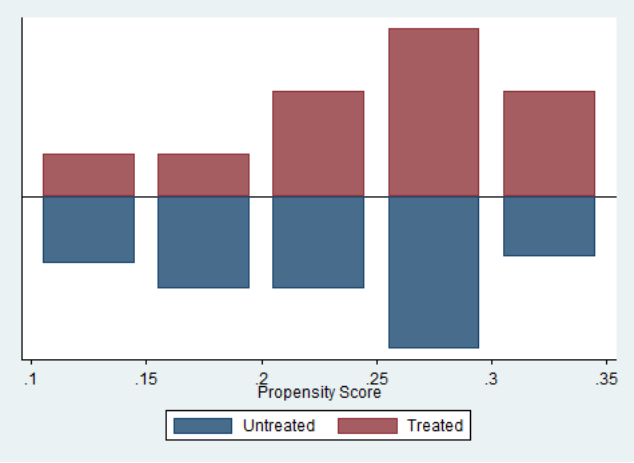
1.4.1 Using single nearest neighbour matching



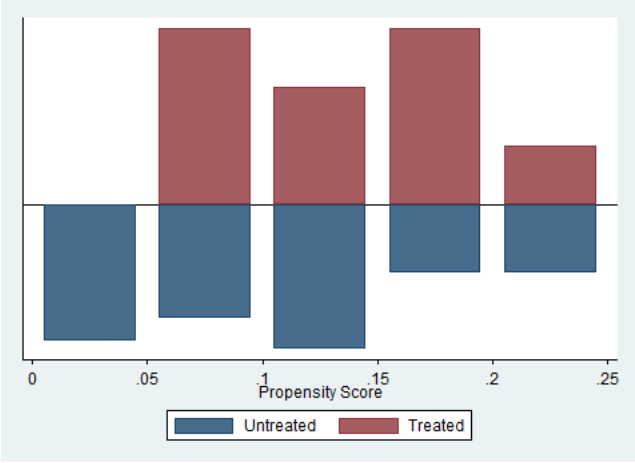
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



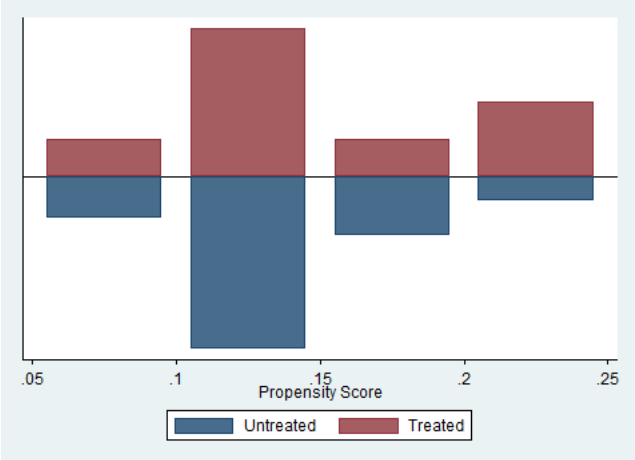
(c) Treatment: entry of outlet between 2006 and 2010



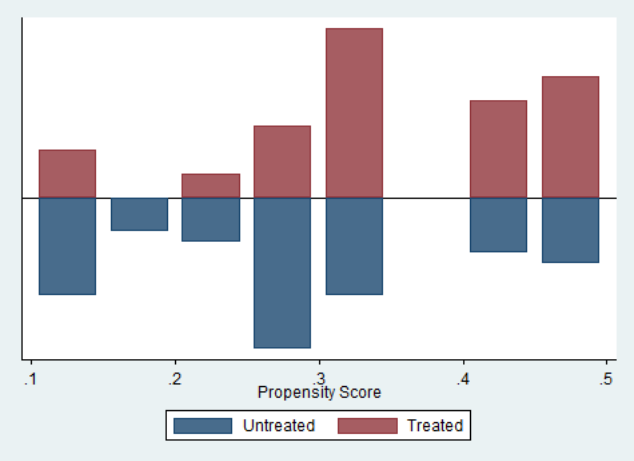
(d) Treatment: entry of outlet between 2010 and 2015

Figure 19: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2006, for each of the four treatment groups

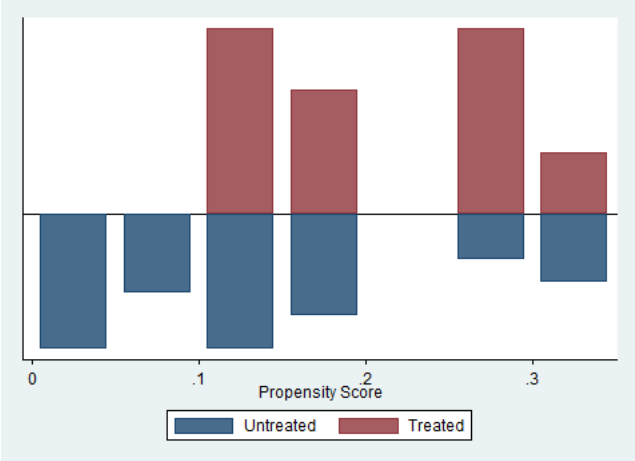
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



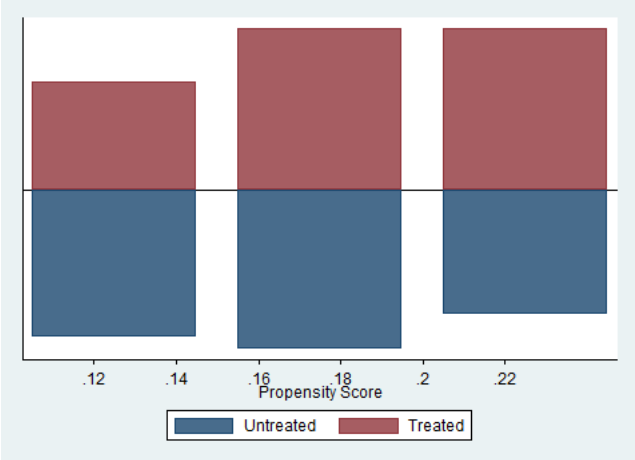
(c) Treatment: entry of outlet between 2006 and 2010



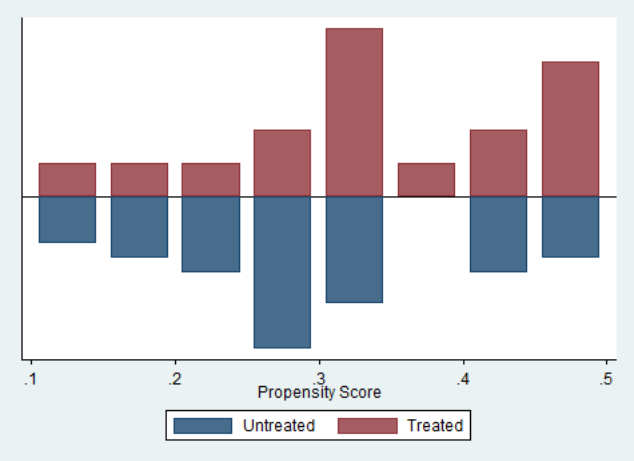
(d) Treatment: entry of outlet between 2010 and 2015

Figure 20: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2010, for each of the four treatment groups

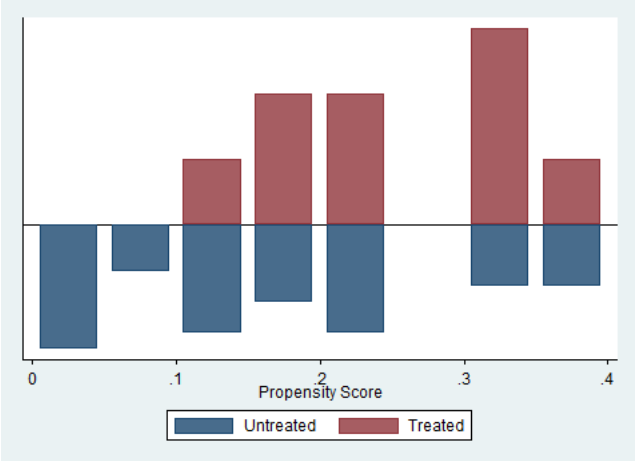
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



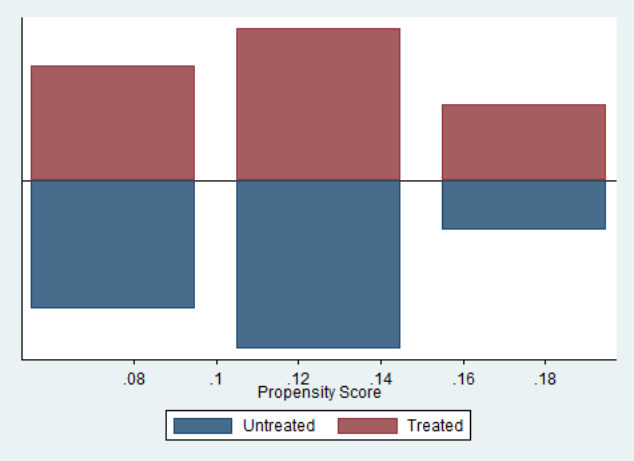
(c) Treatment: entry of outlet between 2006 and 2010



(d) Treatment: entry of outlet between 2010 and 2015

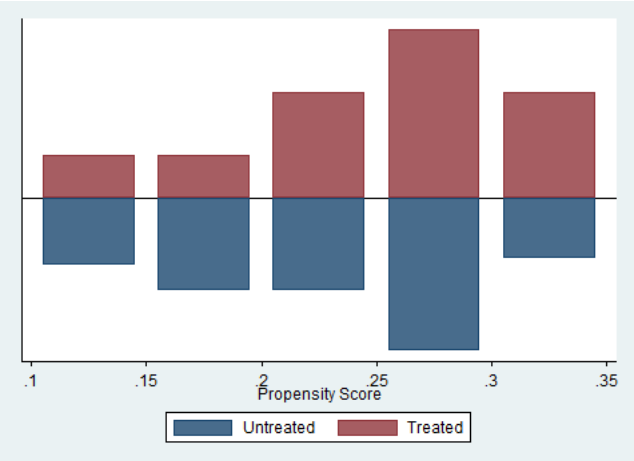
Figure 21: Histograms resulting from imposing the common support assumption with single nearest neighbour matching in year 2015, for each of the four treatment groups

1.4.2 Using non-parametric local linear matching

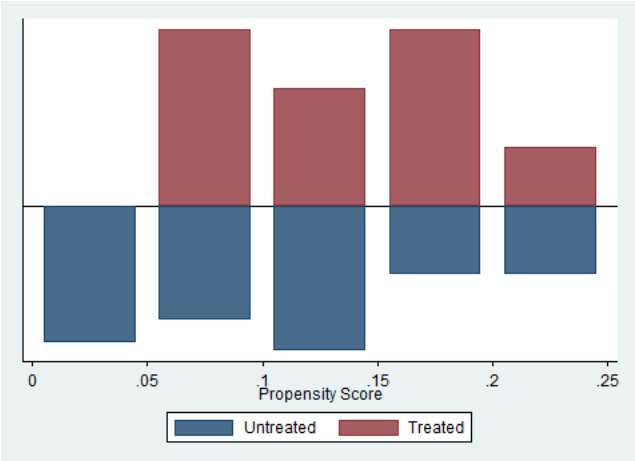


(a) Treatment: entry of supermarket between 2006 and 2010

(b) Treatment: entry of supermarket between 2010 and 2015



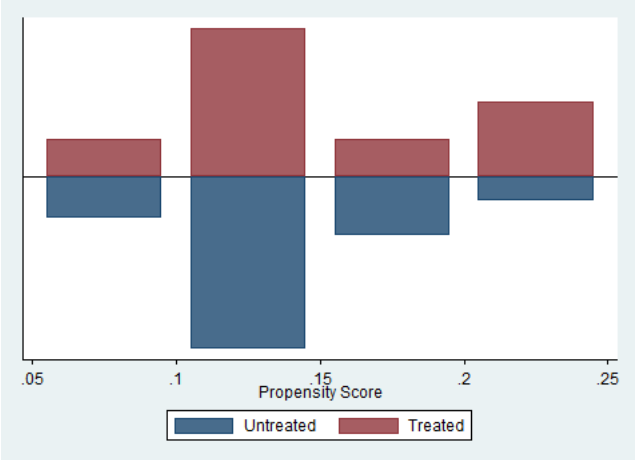
(c) Treatment: entry of outlet between 2006 and 2010



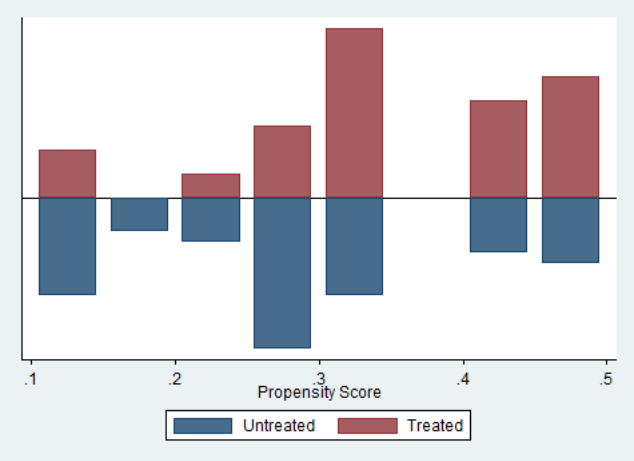
(d) Treatment: entry of outlet between 2010 and 2015

Figure 22: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2006, for each of the four treatment groups

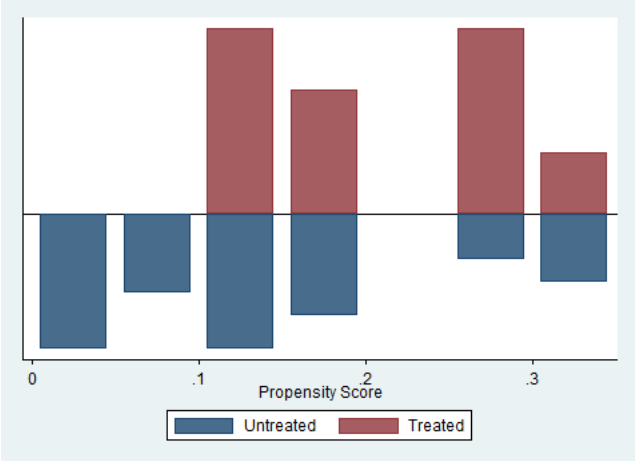
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



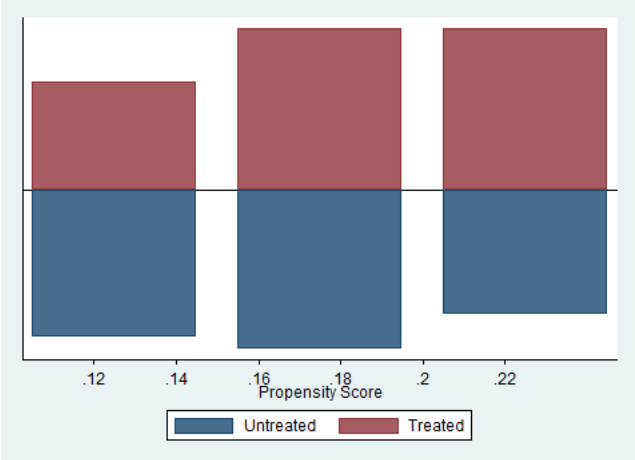
(c) Treatment: entry of outlet between 2006 and 2010



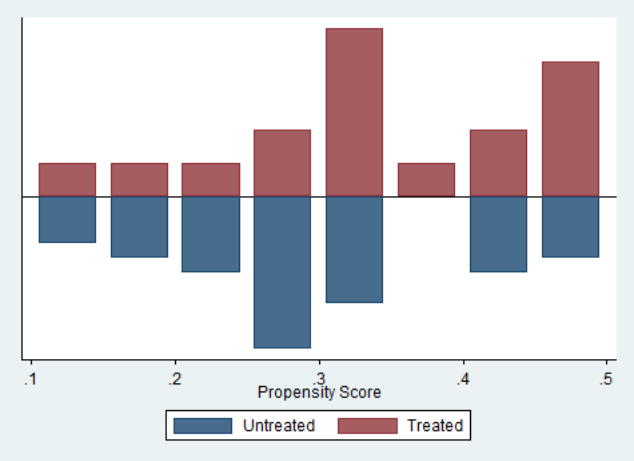
(d) Treatment: entry of outlet between 2010 and 2015

Figure 23: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2010, for each of the four treatment groups

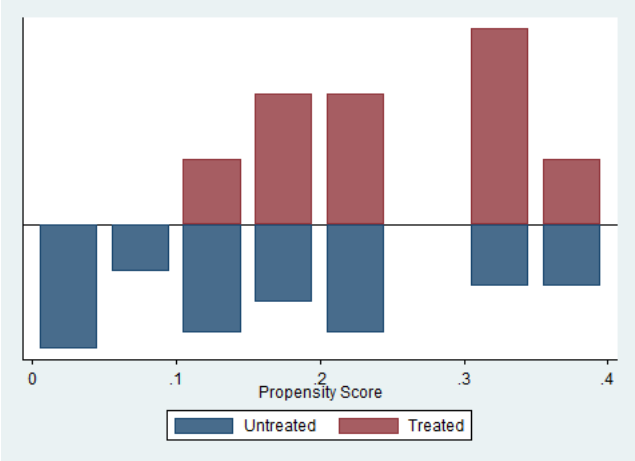
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



(c) Treatment: entry of outlet between 2006 and 2010



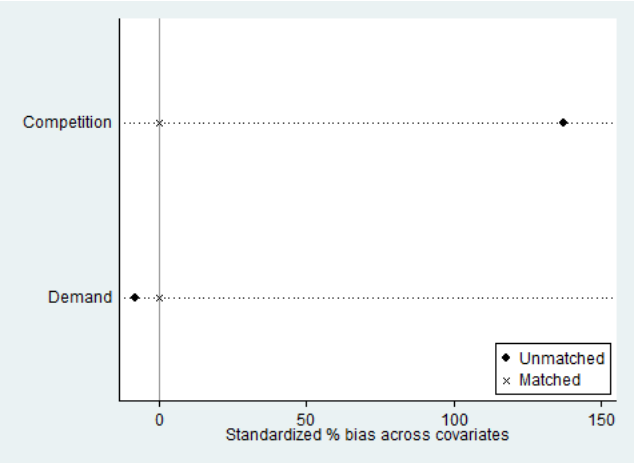
(d) Treatment: entry of outlet between 2010 and 2015

Figure 24: Histograms resulting from imposing the common support assumption with non-parametric local linear matching in year 2015, for each of the four treatment groups

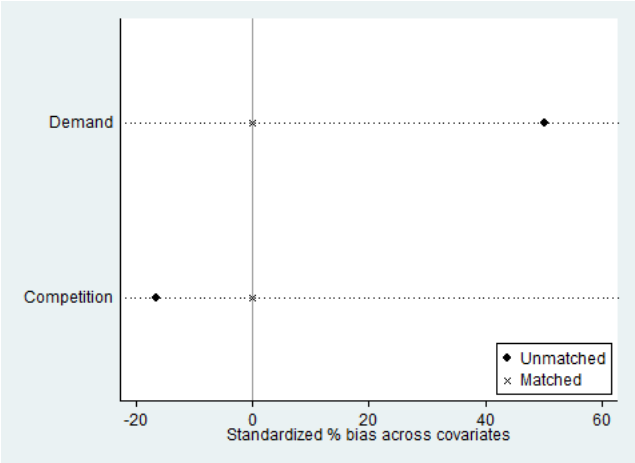
2 Balancing tests for covariates in matched sample

2.1 Competitors are the 5 single nearest neighbours of a retailer

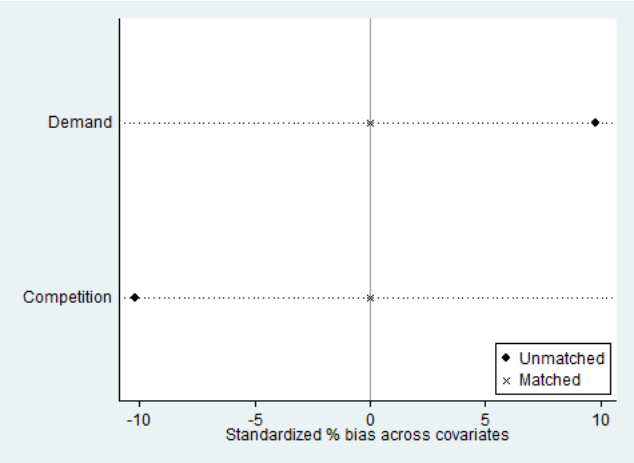
2.1.1 Using single nearest neighbour matching



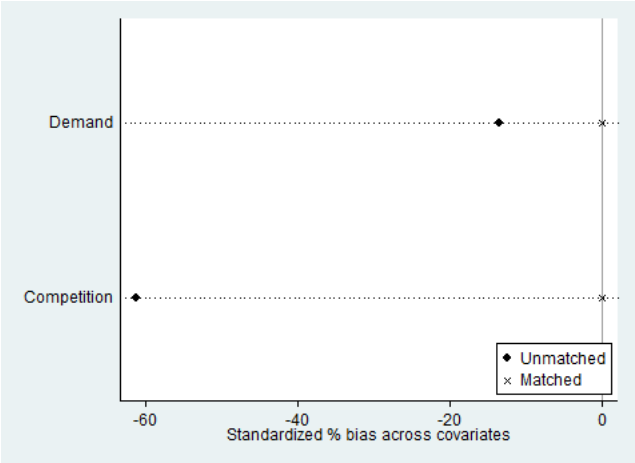
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

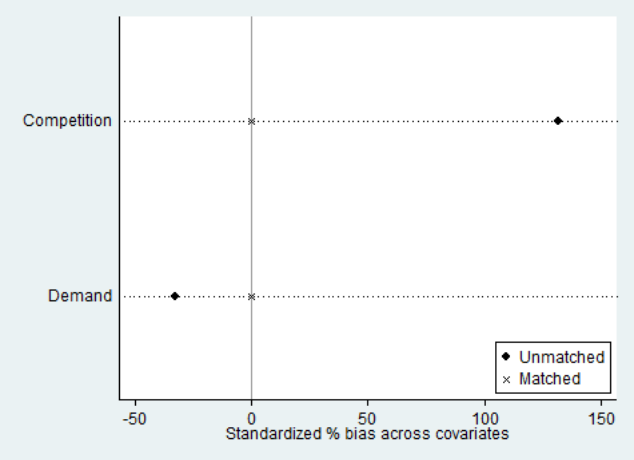


(c) Treatment: entry of outlet between 2006 and 2010

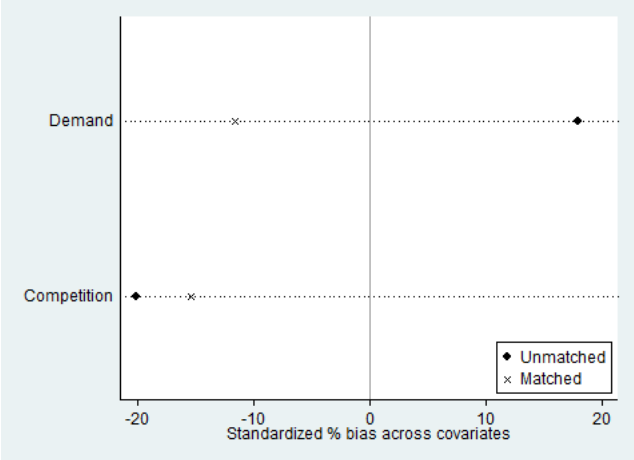


(d) Treatment: entry of outlet between 2010 and 2015

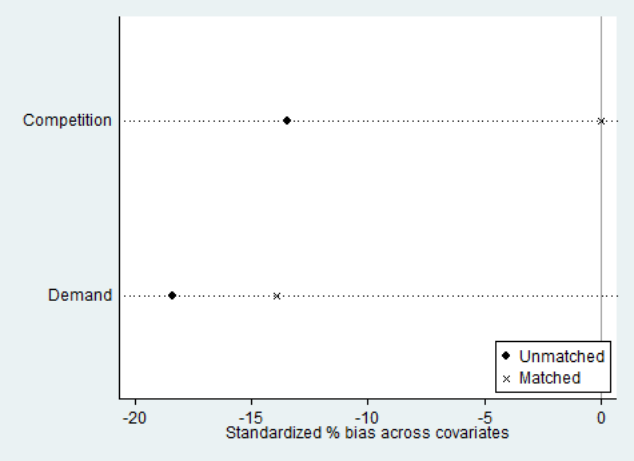
Figure 25: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2006, for each of the four treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the average walking time (in minutes) to the five nearest competitors of a retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



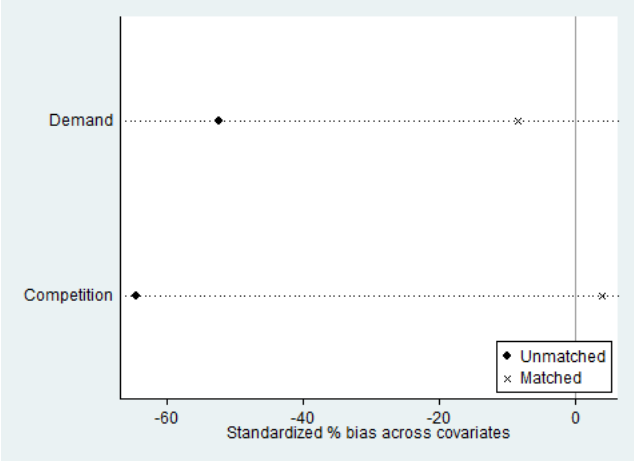
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

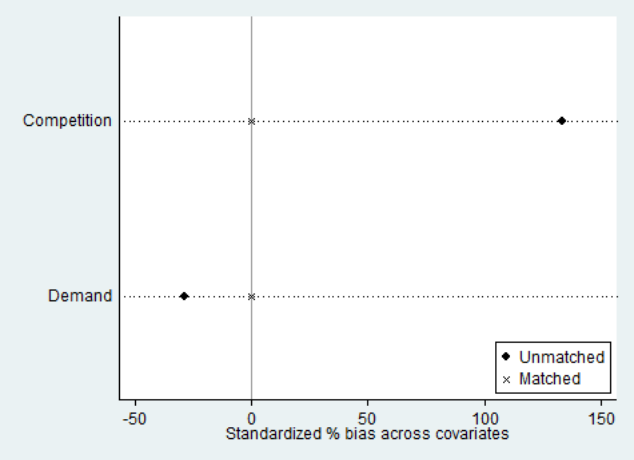


(c) Treatment: entry of outlet between 2006 and 2010

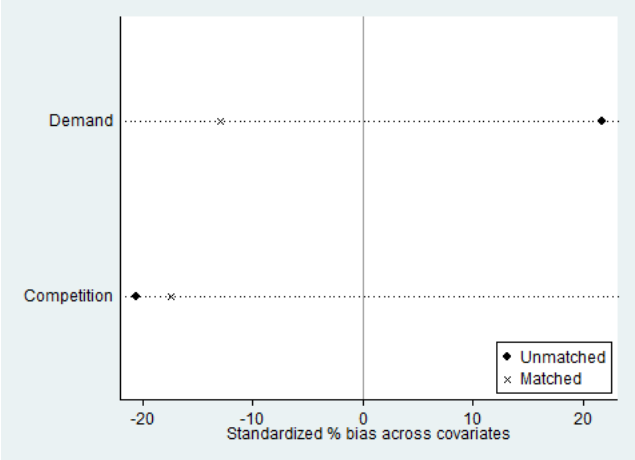


(d) Treatment: entry of outlet between 2010 and 2015

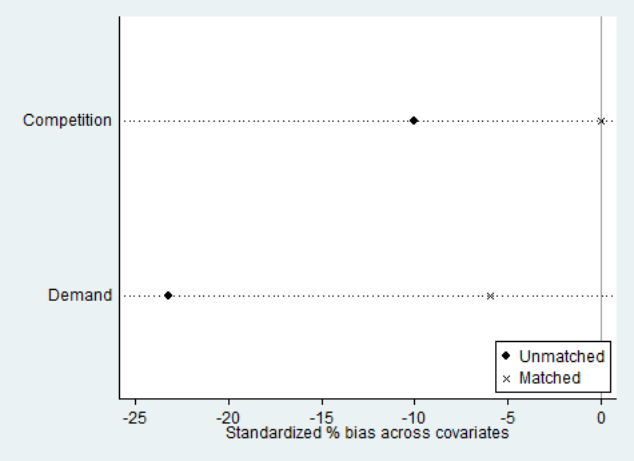
Figure 26: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2010, for each of the four treatment groups *NOTES*: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the average walking time (in minutes) to the five nearest competitors of a retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



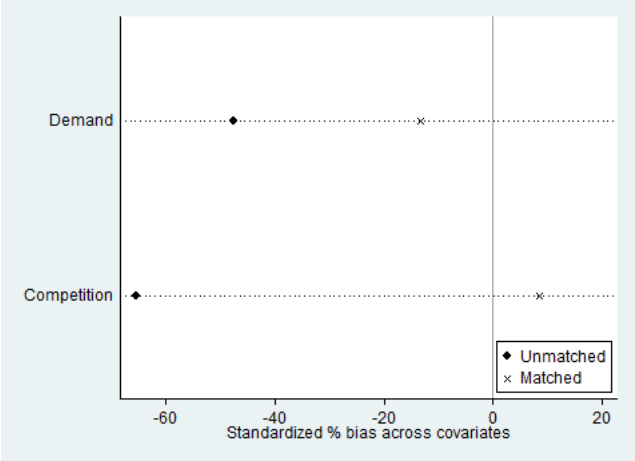
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



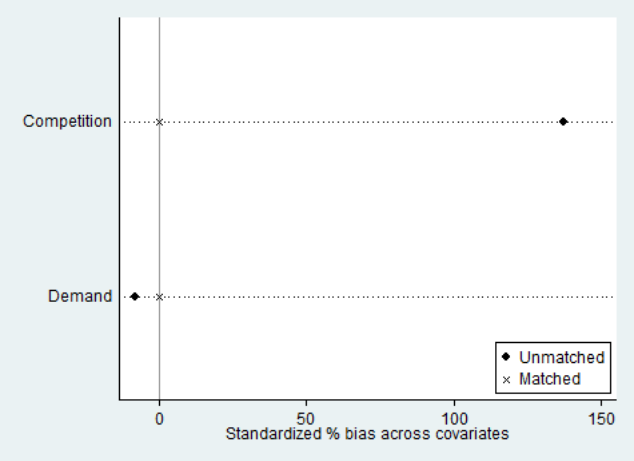
(c) Treatment: entry of outlet between 2006 and 2010



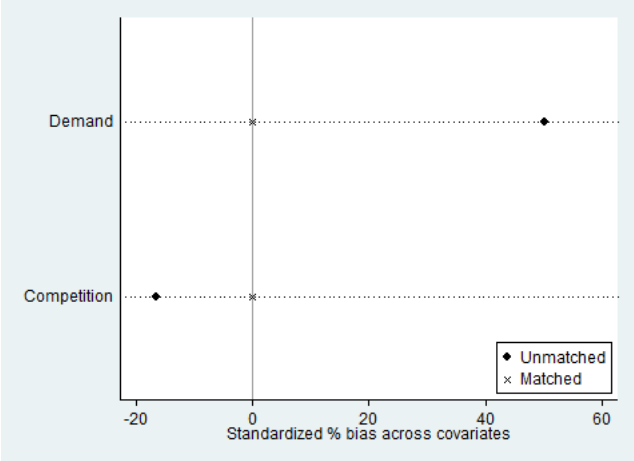
(d) Treatment: entry of outlet between 2010 and 2015

Figure 27: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2015, for each of the four treatment groups *NOTES*: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the average walking time (in minutes) to the five nearest competitors of a retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

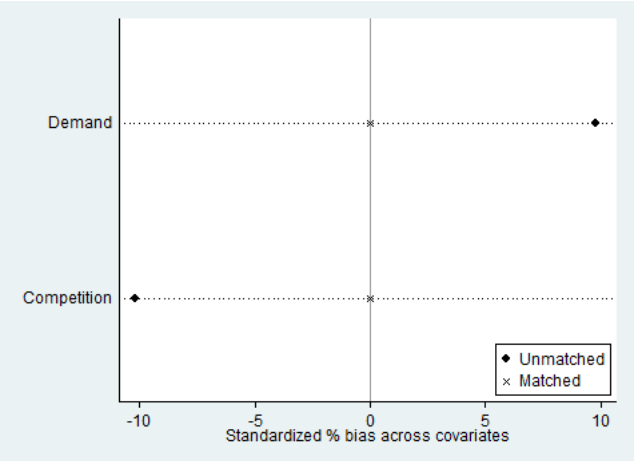
2.1.2 Using non-parametric local linear matching



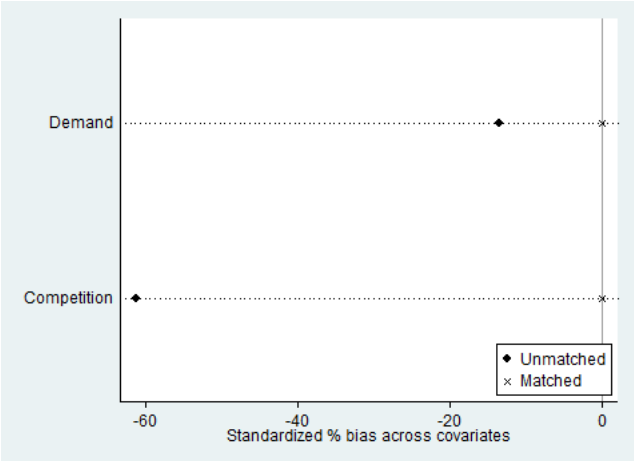
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

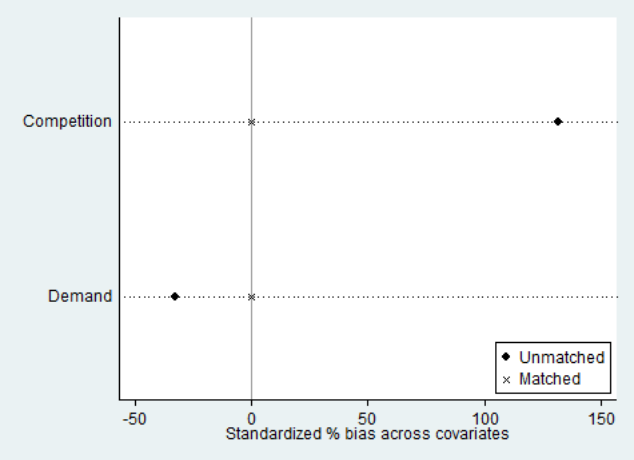


(c) Treatment: entry of outlet between 2006 and 2010

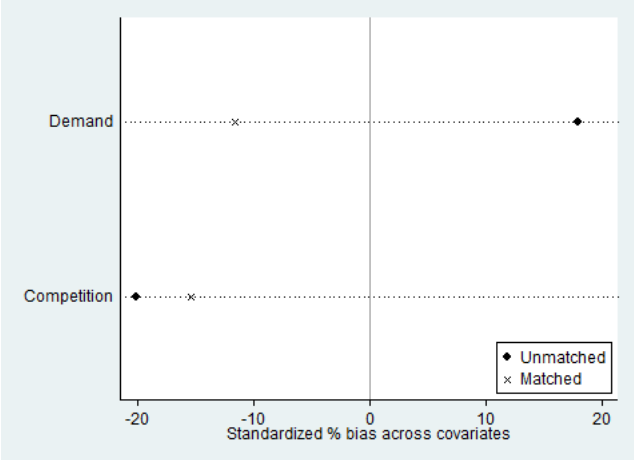


(d) Treatment: entry of outlet between 2010 and 2015

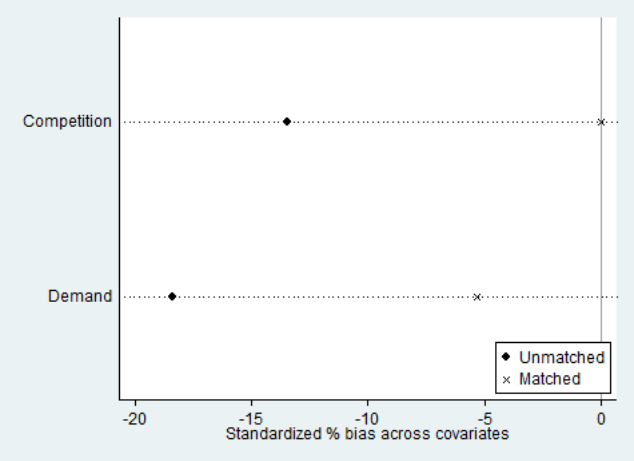
Figure 28: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2006, for each of the 4 treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the average walking time (in minutes) to the five nearest competitors of a retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



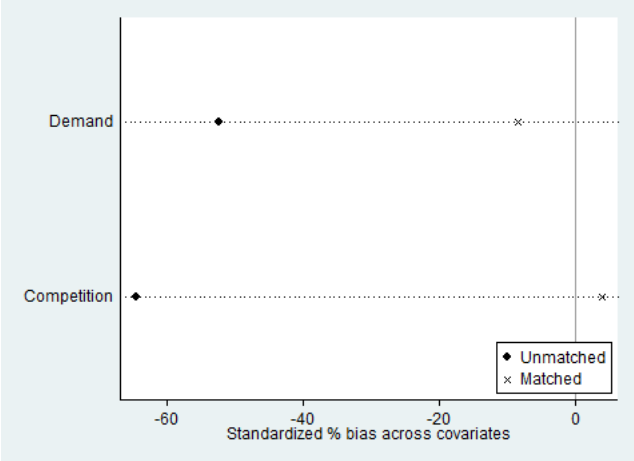
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



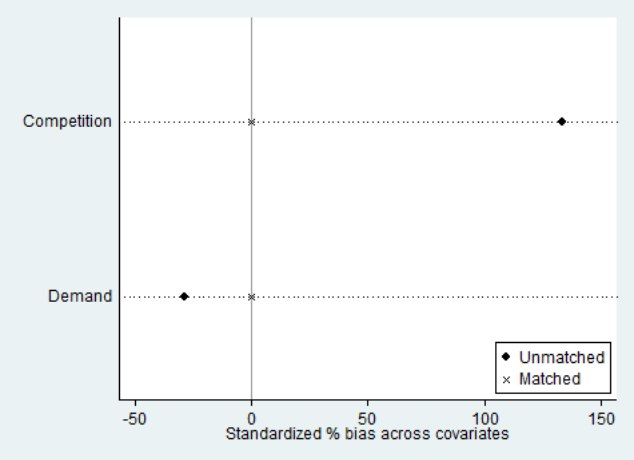
(c) Treatment: entry of outlet between 2006 and 2010



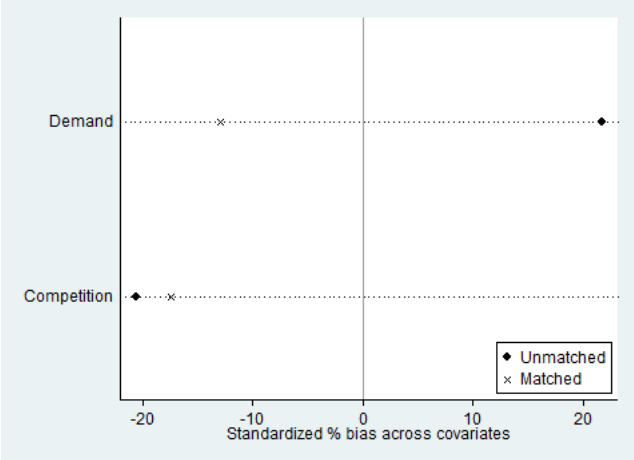
(d) Treatment: entry of outlet between 2010 and 2015

Figure 29: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2010, for each of the four treatment groups

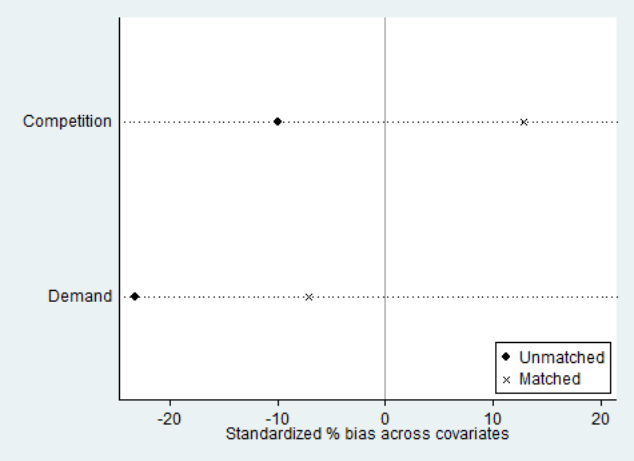
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the average walking time (in minutes) to the five nearest competitors of a retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



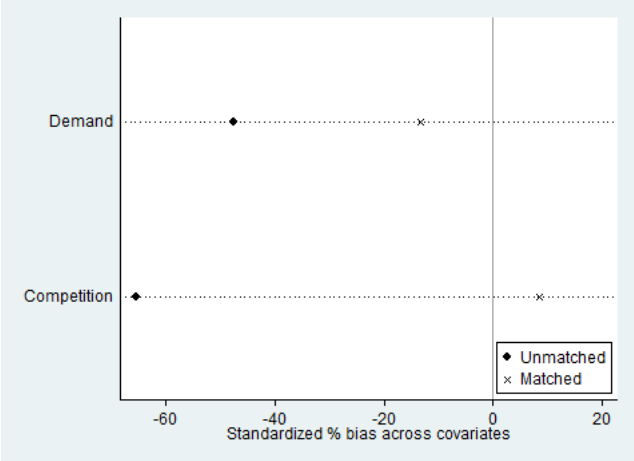
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



(c) Treatment: entry of outlet between 2006 and 2010



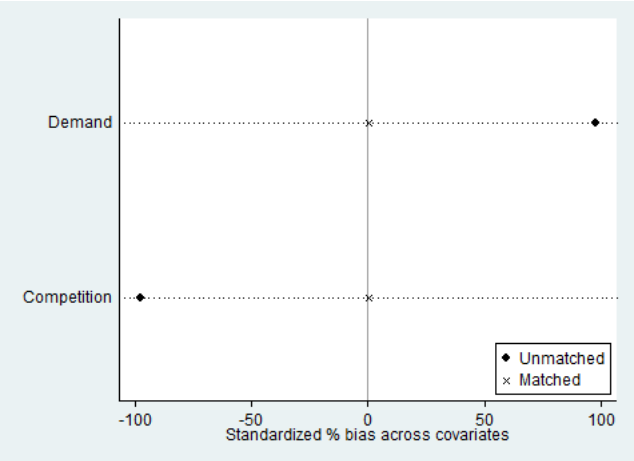
(d) Treatment: entry of outlet between 2010 and 2015

Figure 30: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2015, for each of the four treatment groups

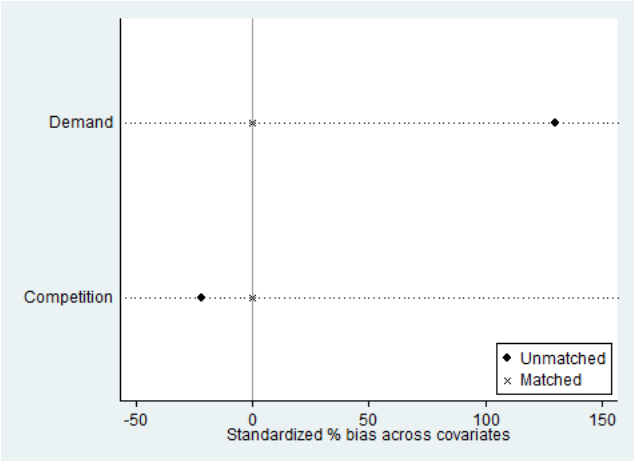
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the average walking time (in minutes) to the five nearest competitors of a retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

2.2 Competitors are all retailers located within a 400m radius

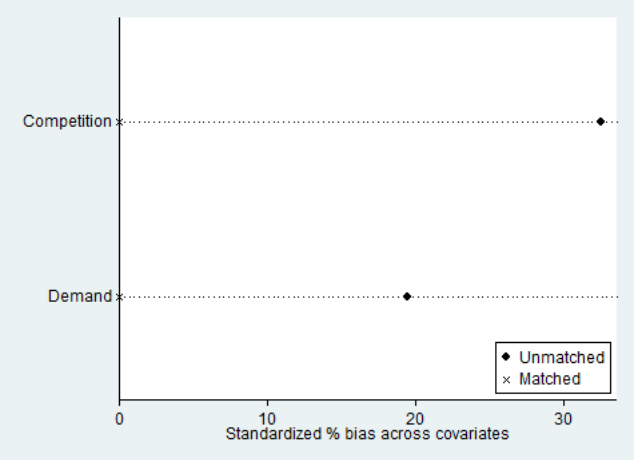
2.2.1 Using single nearest neighbour matching



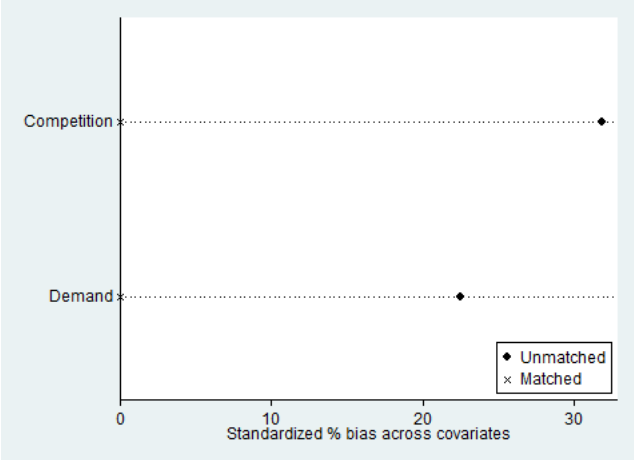
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

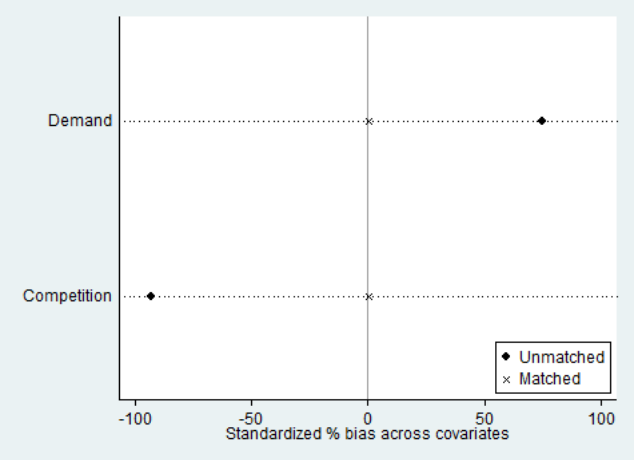


(c) Treatment: entry of outlet between 2006 and 2010

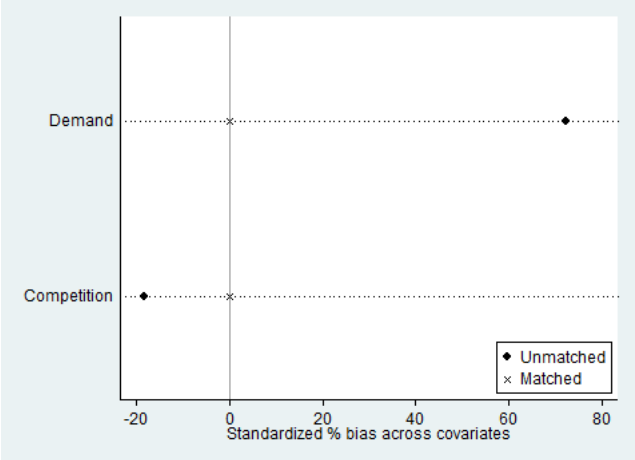


(d) Treatment: entry of outlet between 2010 and 2015

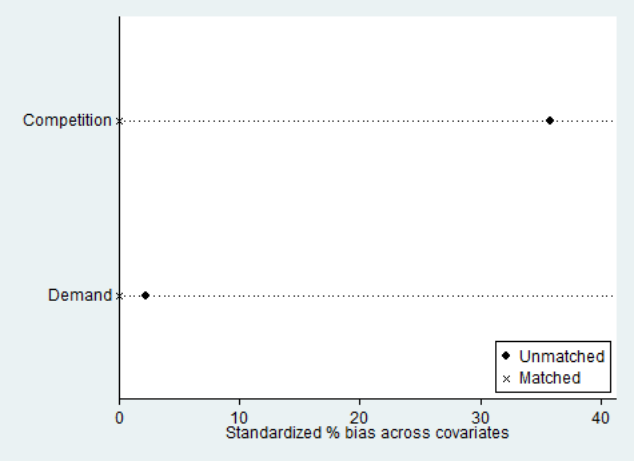
Figure 31: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2006, for each of the four treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 400m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



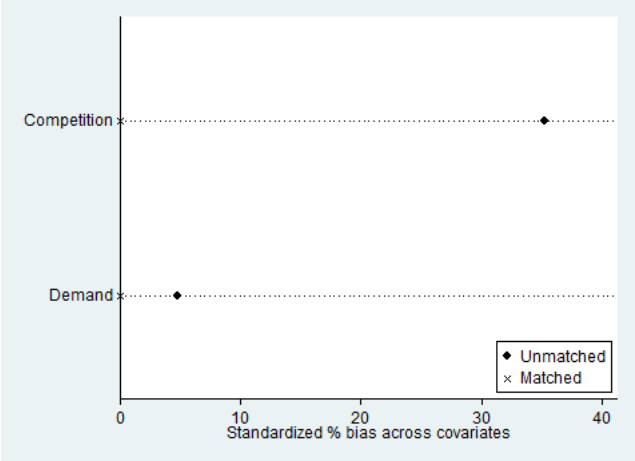
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

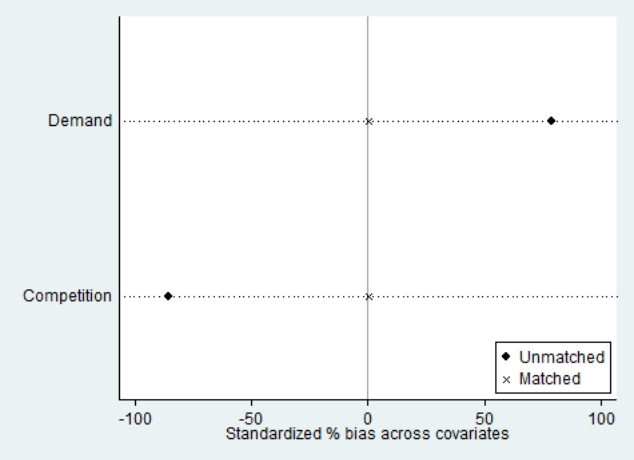


(c) Treatment: entry of outlet between 2006 and 2010

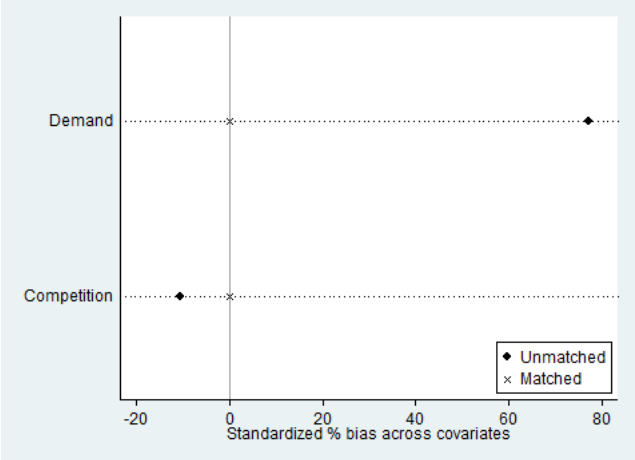


(d) Treatment: entry of outlet between 2010 and 2015

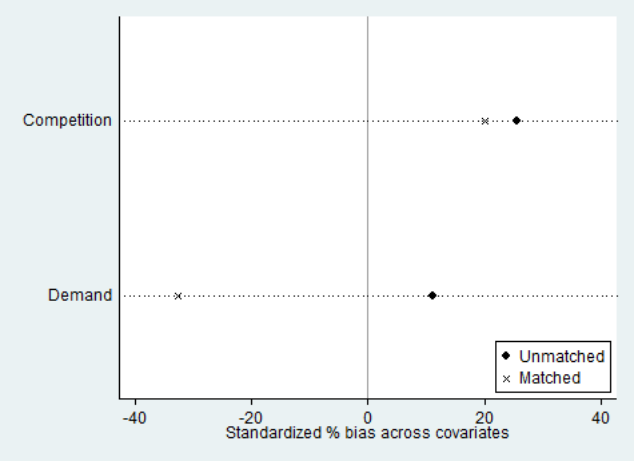
Figure 32: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2010, for each of the four treatment groups *NOTES*: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 400m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



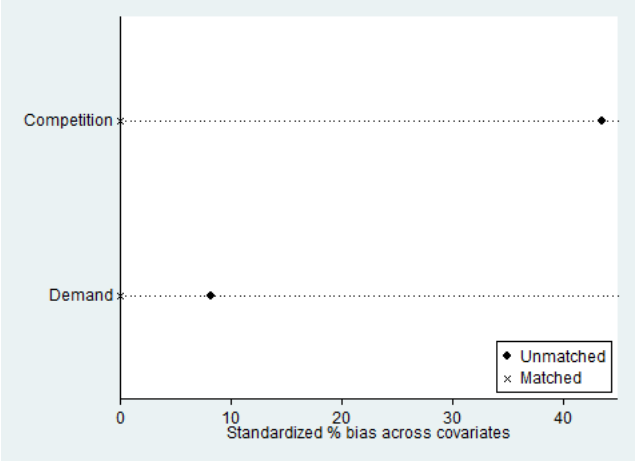
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



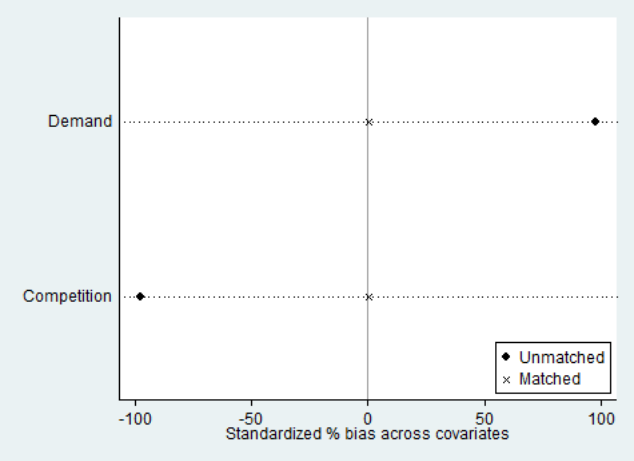
(c) Treatment: entry of outlet between 2006 and 2010



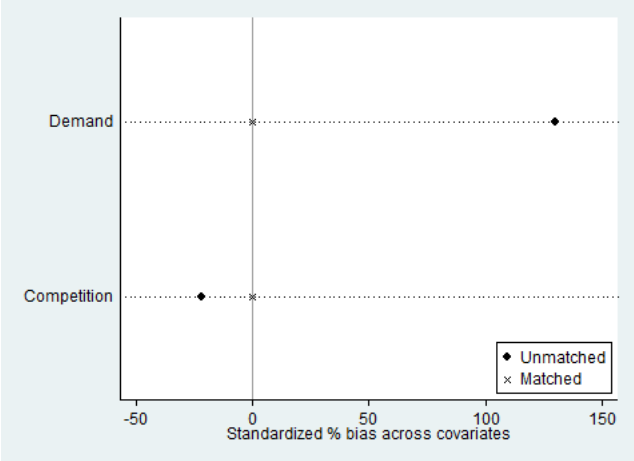
(d) Treatment: entry of outlet between 2010 and 2015

Figure 33: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2015, for each of the four treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 400m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

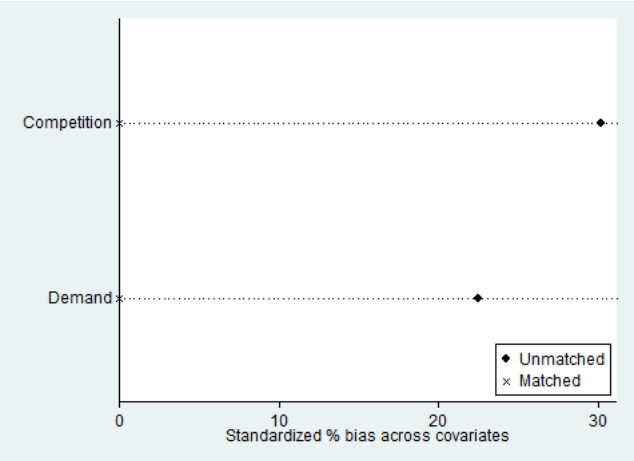
2.2.2 Using non-parametric local linear matching



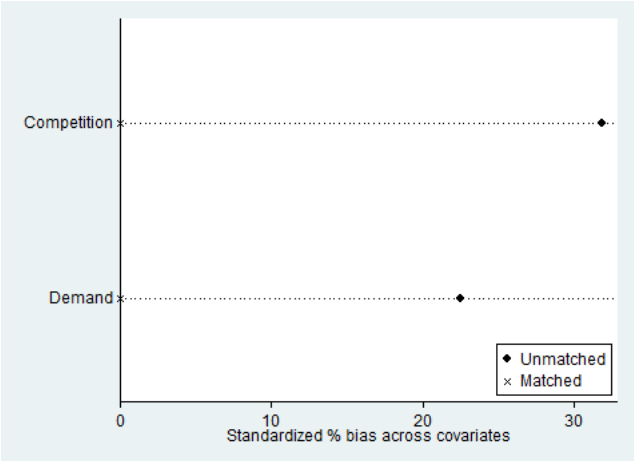
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

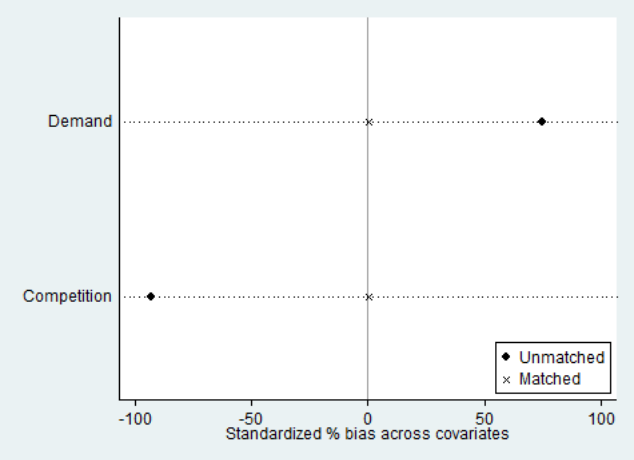


(c) Treatment: entry of outlet between 2006 and 2010

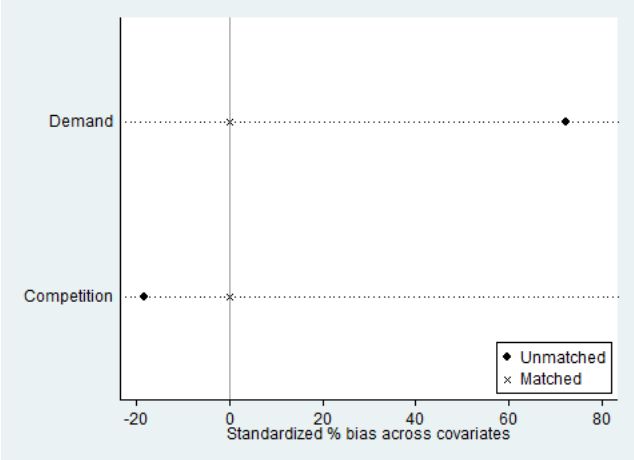


(d) Treatment: entry of outlet between 2010 and 2015

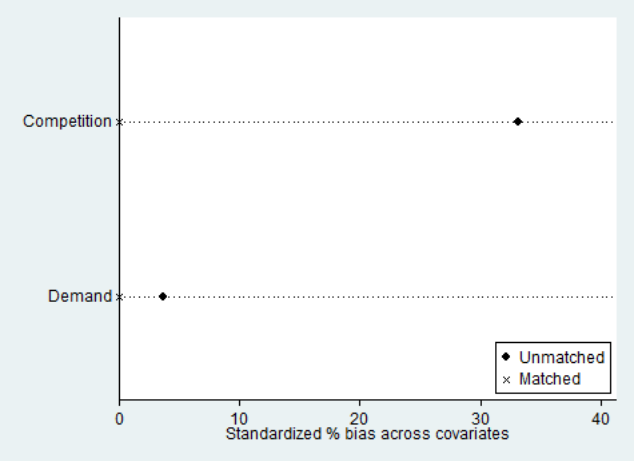
Figure 34: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2006, for each of the 4 treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 400m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



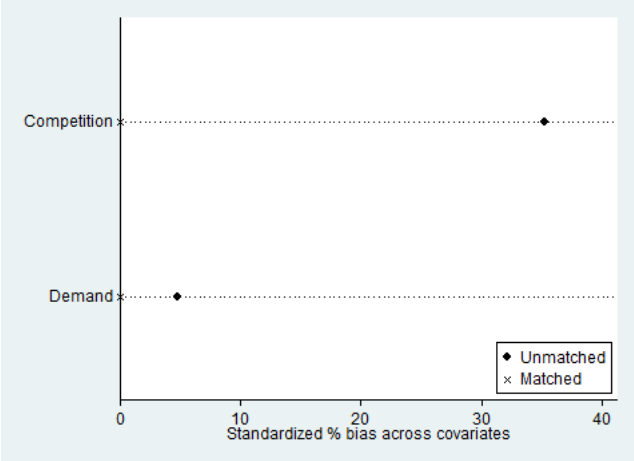
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



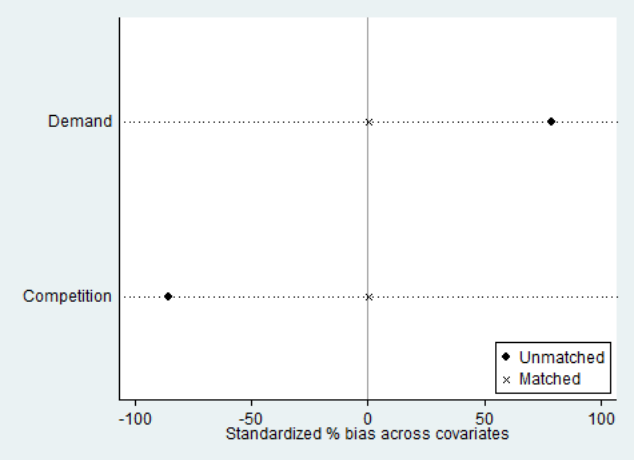
(c) Treatment: entry of outlet between 2006 and 2010



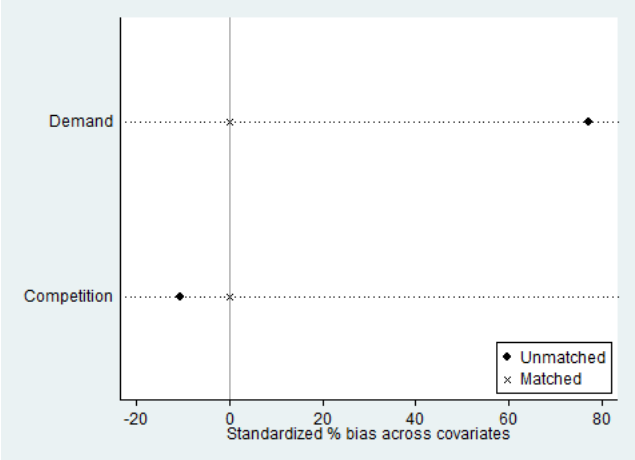
(d) Treatment: entry of outlet between 2010 and 2015

Figure 35: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2010, for each of the four treatment groups

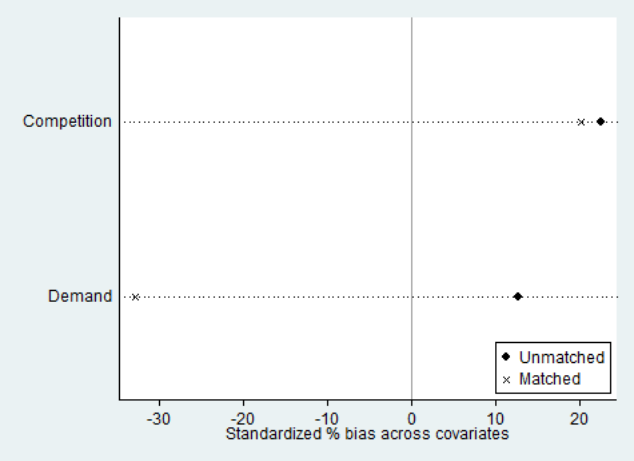
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 400m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



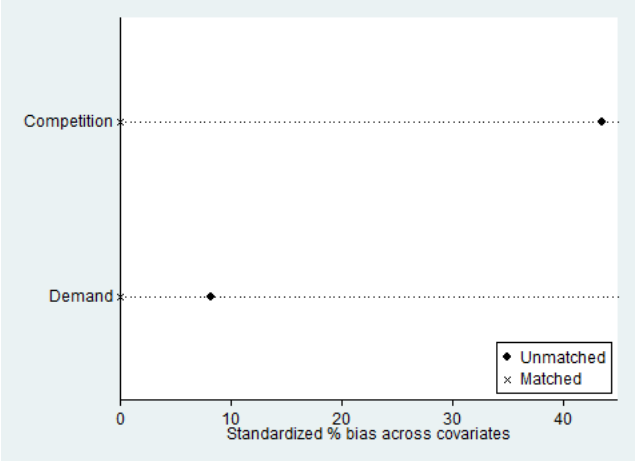
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



(c) Treatment: entry of outlet between 2006 and 2010



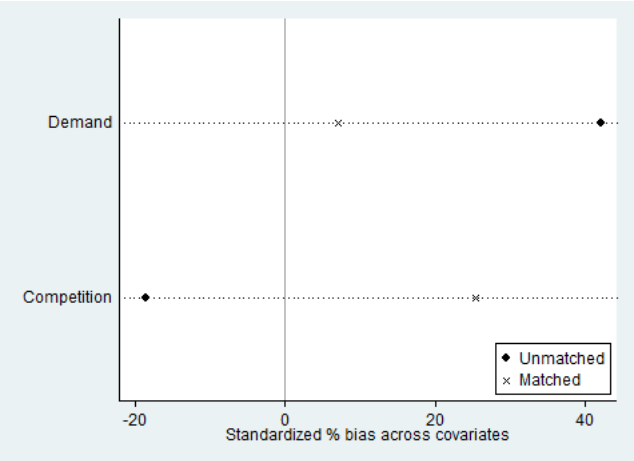
(d) Treatment: entry of outlet between 2010 and 2015

Figure 36: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2015, for each of the four treatment groups

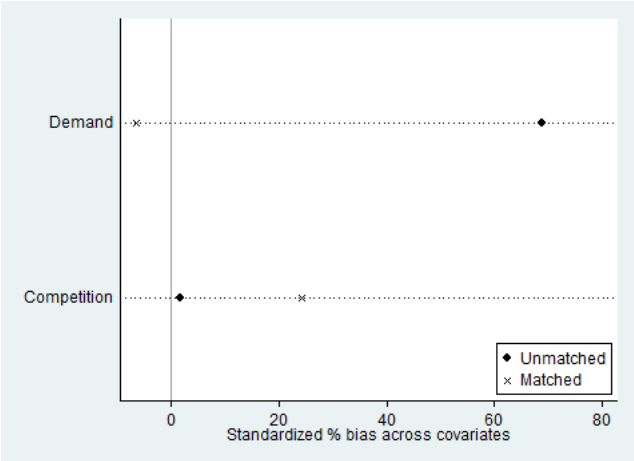
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 400m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

2.3 Competitors are all retailers located within a 600m radius

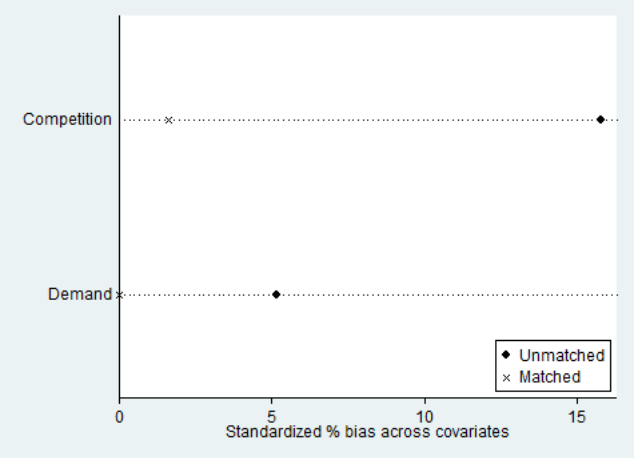
2.3.1 Using single nearest neighbour matching



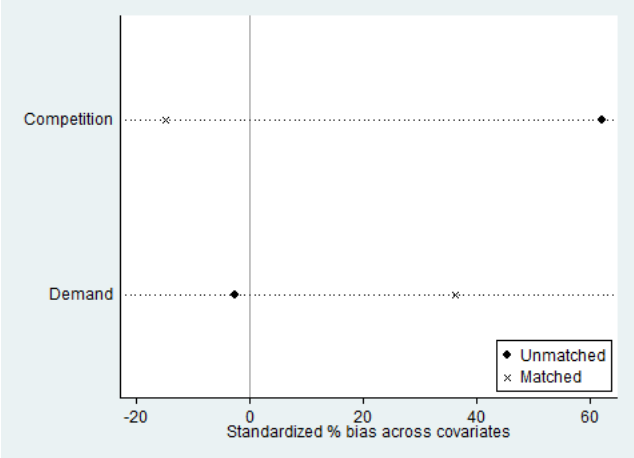
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

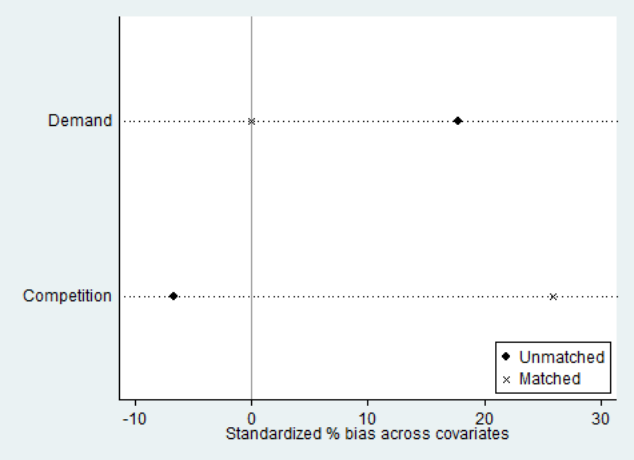


(c) Treatment: entry of outlet between 2006 and 2010

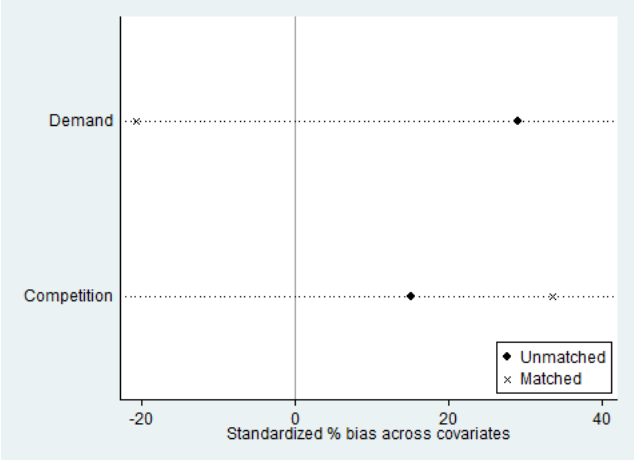


(d) Treatment: entry of outlet between 2010 and 2015

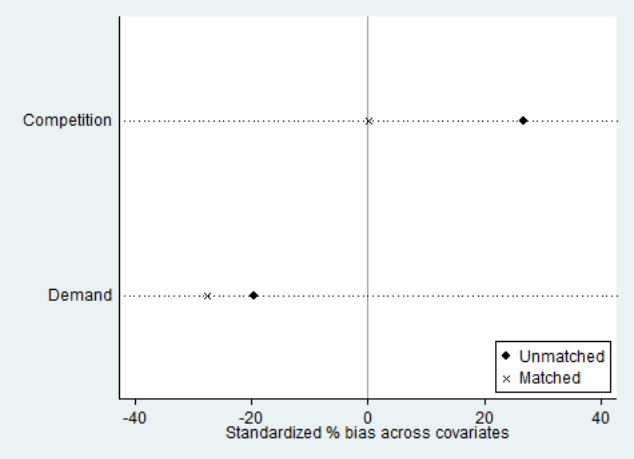
Figure 37: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2006, for each of the four treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of the number of retailers within a 600m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



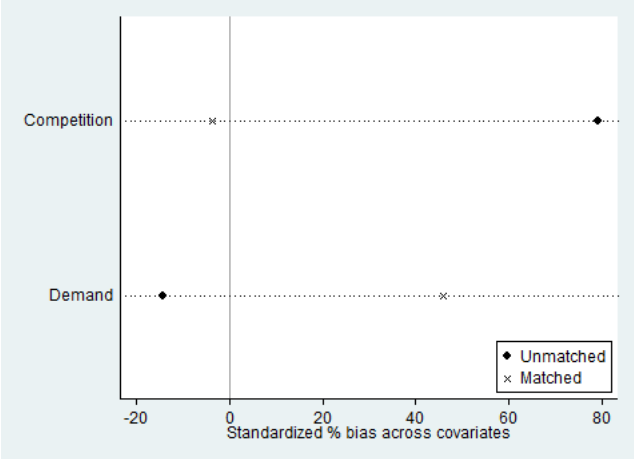
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

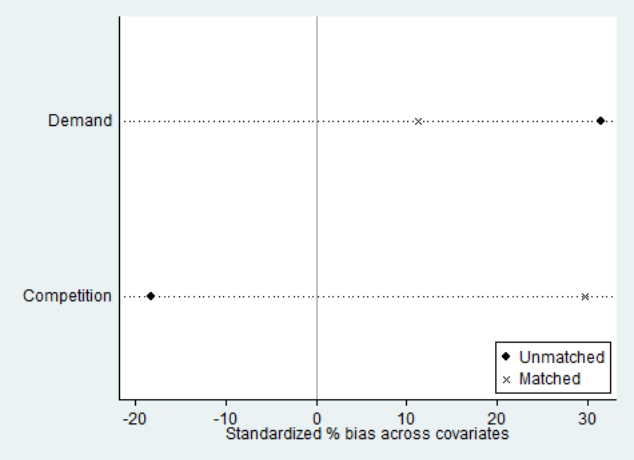


(c) Treatment: entry of outlet between 2006 and 2010

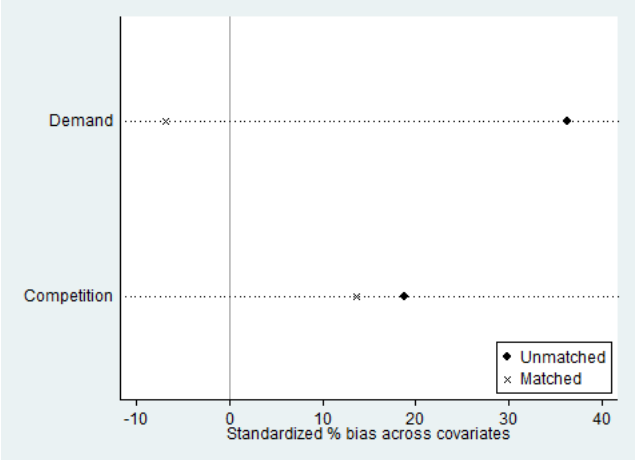


(d) Treatment: entry of outlet between 2010 and 2015

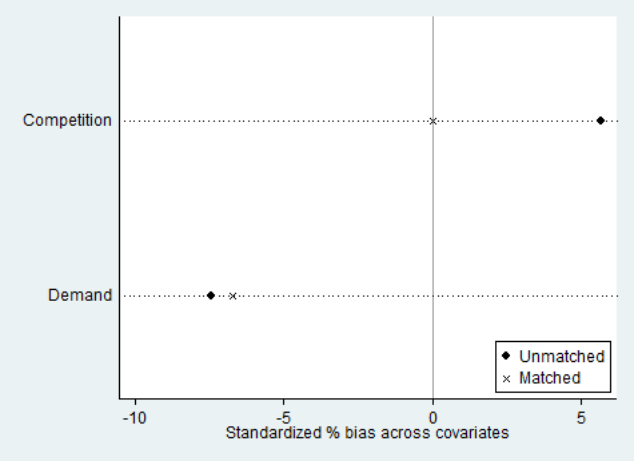
Figure 38: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2010, for each of the four treatment groups *NOTES*: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of the number of retailers within a 600m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



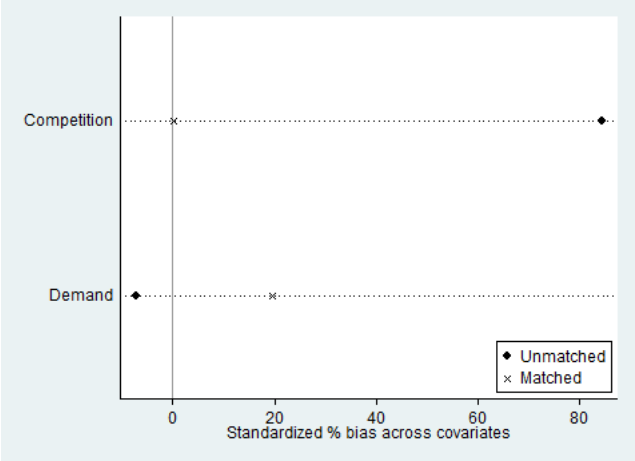
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



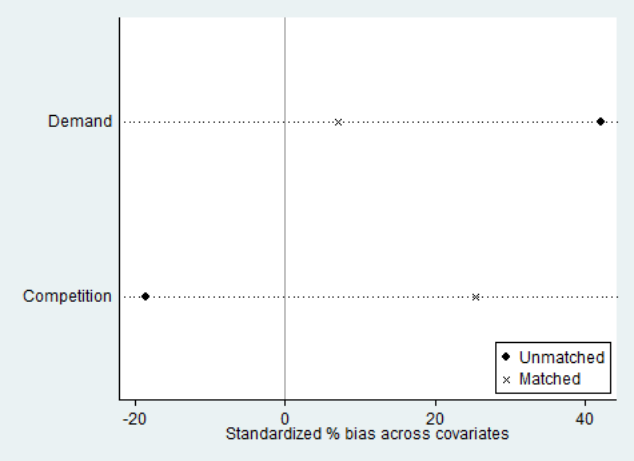
(c) Treatment: entry of outlet between 2006 and 2010



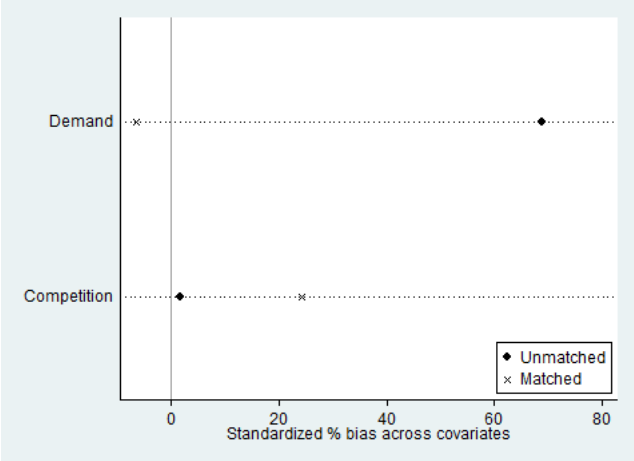
(d) Treatment: entry of outlet between 2010 and 2015

Figure 39: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2015, for each of the four treatment groups *NOTES*: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of the number of retailers within a 600m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

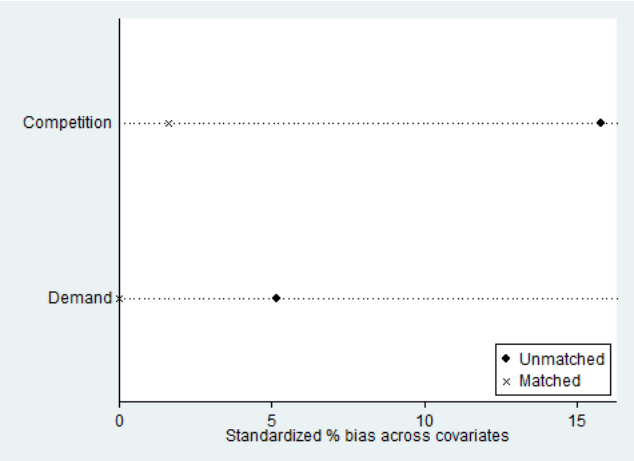
2.3.2 Using non-parametric local linear matching



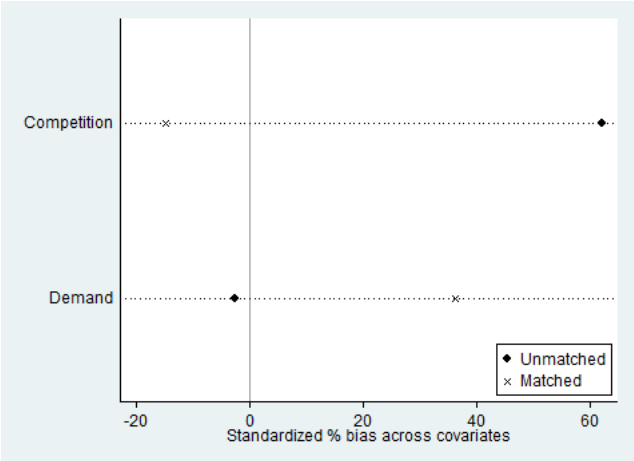
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

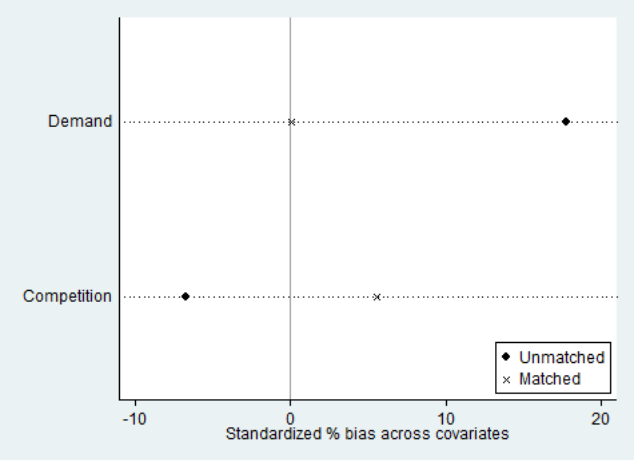


(c) Treatment: entry of outlet between 2006 and 2010

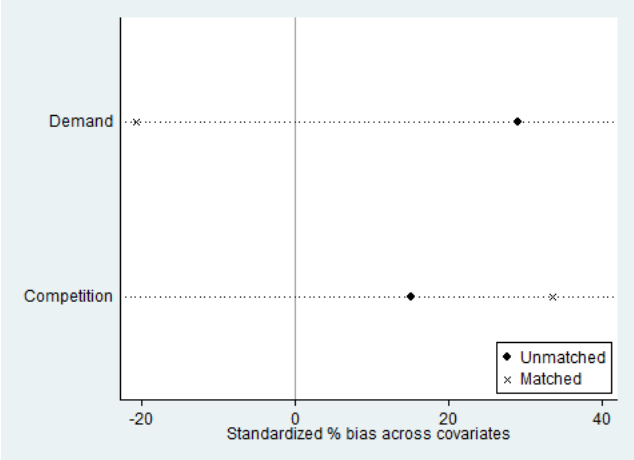


(d) Treatment: entry of outlet between 2010 and 2015

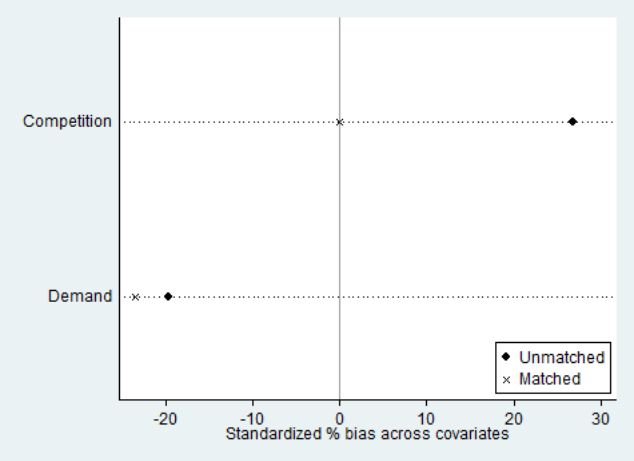
Figure 40: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2006, for each of the 4 treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of the number of retailers within a 600m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



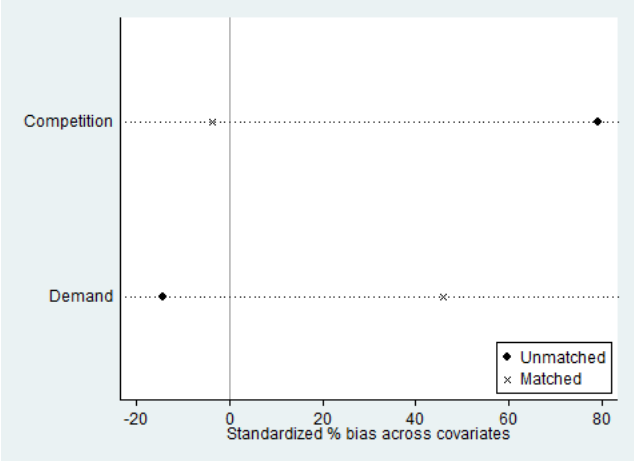
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



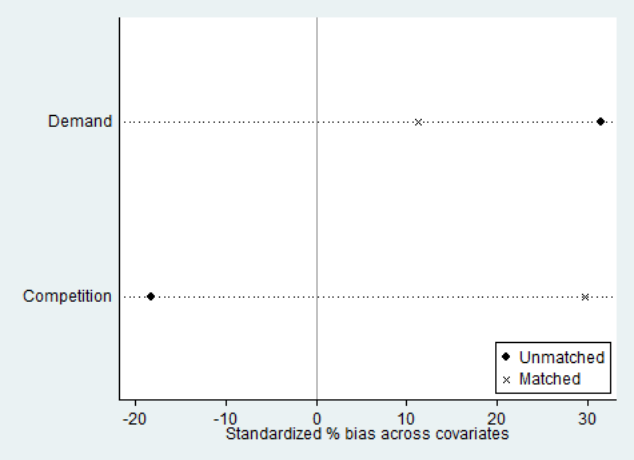
(c) Treatment: entry of outlet between 2006 and 2010



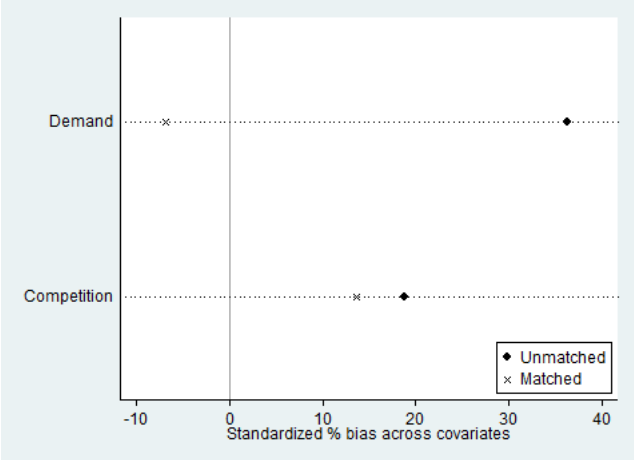
(d) Treatment: entry of outlet between 2010 and 2015

Figure 41: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2010, for each of the four treatment groups

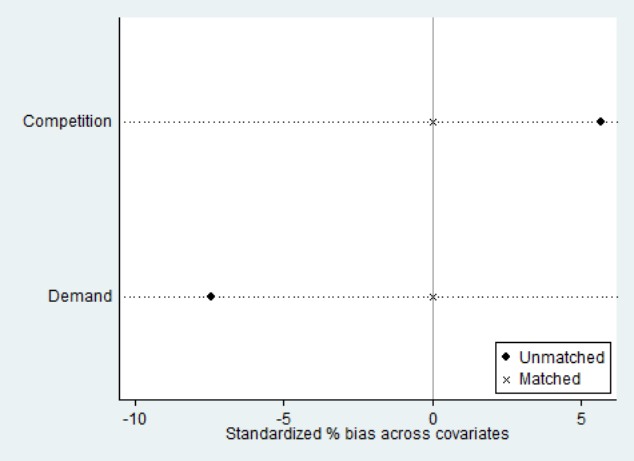
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of the number of retailers within a 600m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



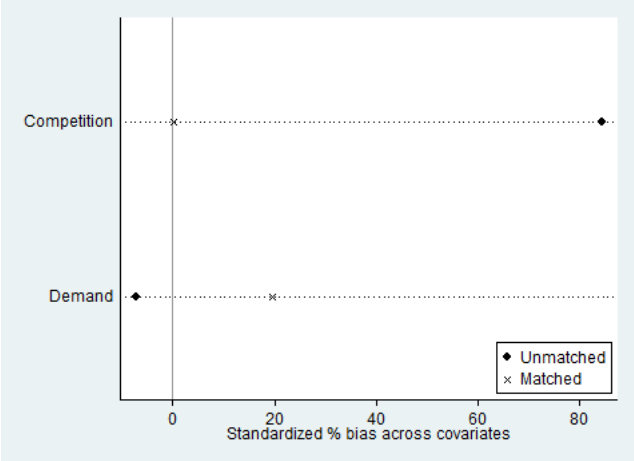
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



(c) Treatment: entry of outlet between 2006 and 2010



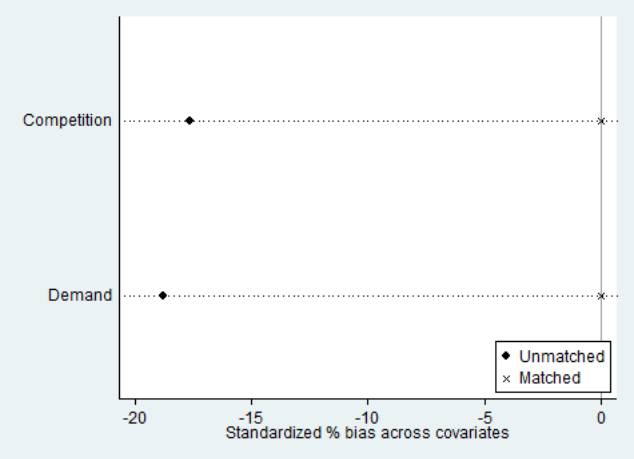
(d) Treatment: entry of outlet between 2010 and 2015

Figure 42: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2015, for each of the four treatment groups

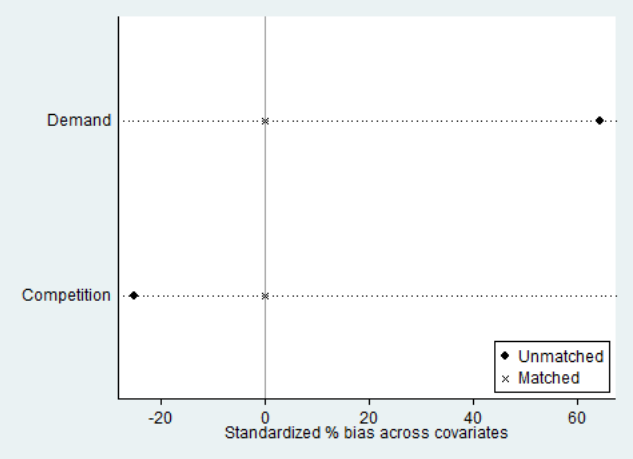
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of the number of retailers within a 600m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 10, for each of the deciles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

2.4 Competitors are all retailers located within a 800m radius

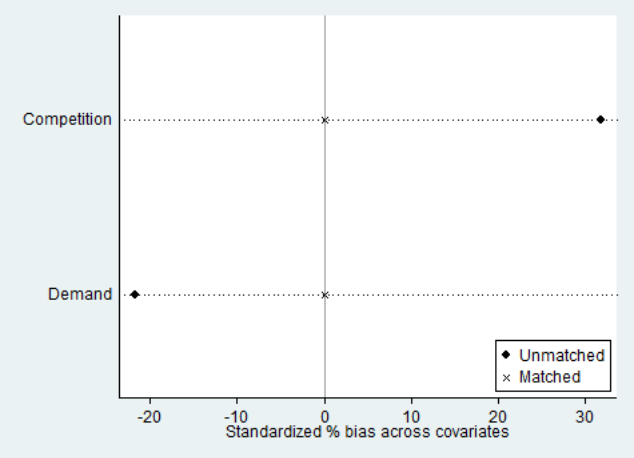
2.4.1 Using single nearest neighbour matching



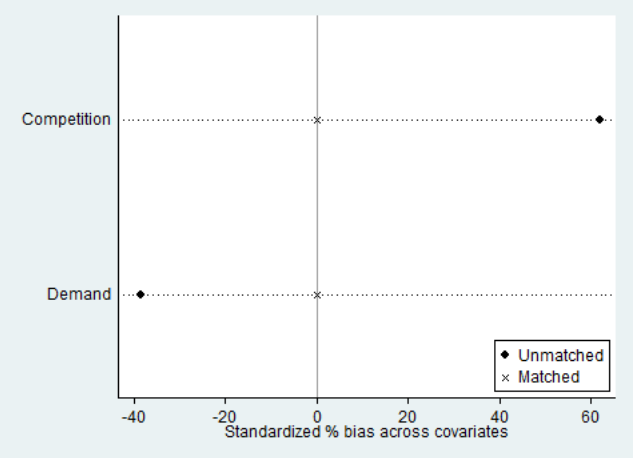
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

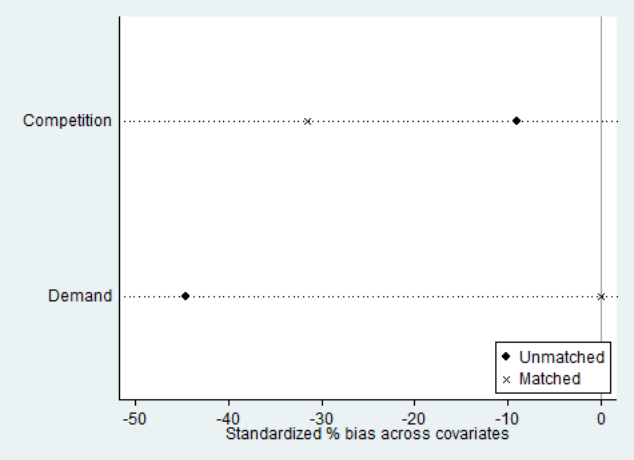


(c) Treatment: entry of outlet between 2006 and 2010

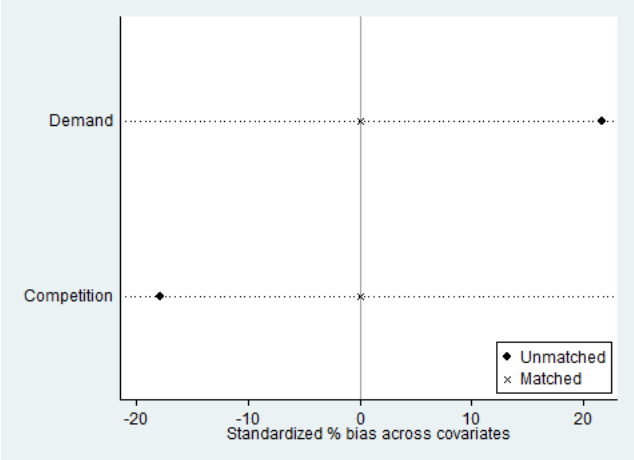


(d) Treatment: entry of outlet between 2010 and 2015

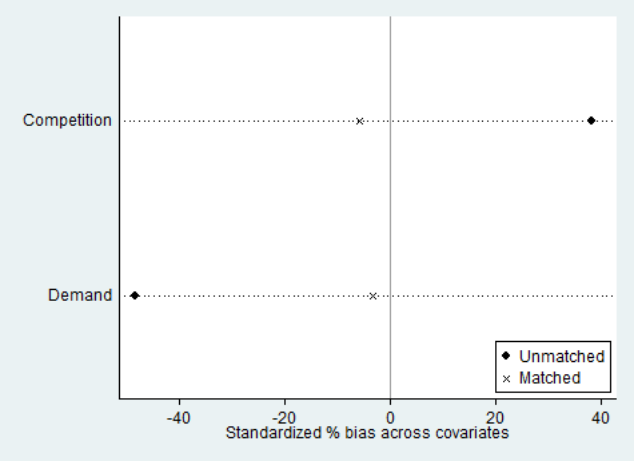
Figure 43: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2006, for each of the four treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 800m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



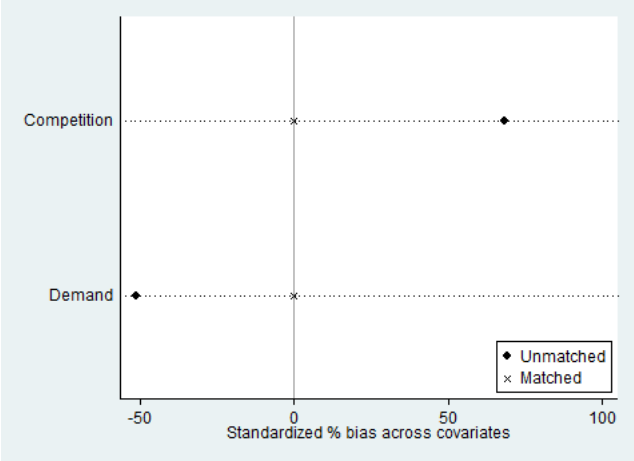
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

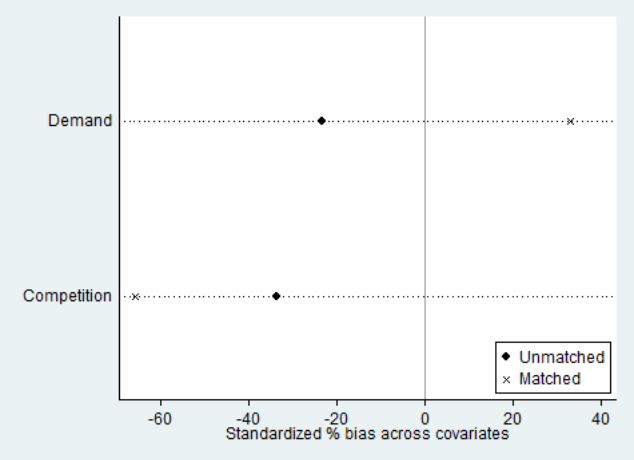


(c) Treatment: entry of outlet between 2006 and 2010

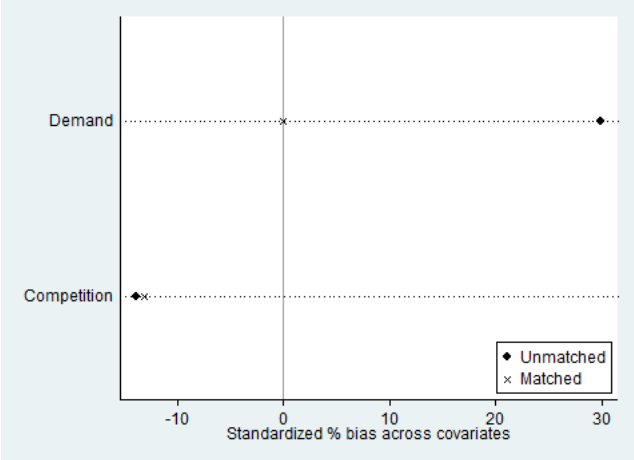


(d) Treatment: entry of outlet between 2010 and 2015

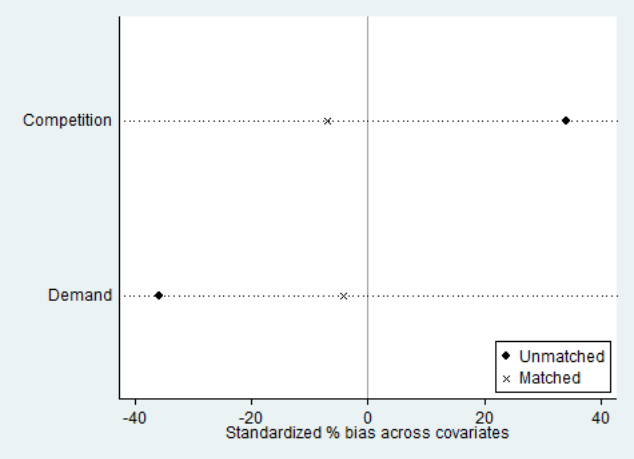
Figure 44: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2010, for each of the four treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 800m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



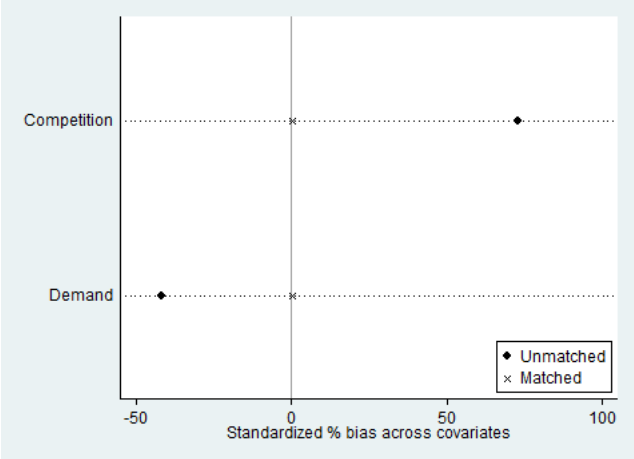
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



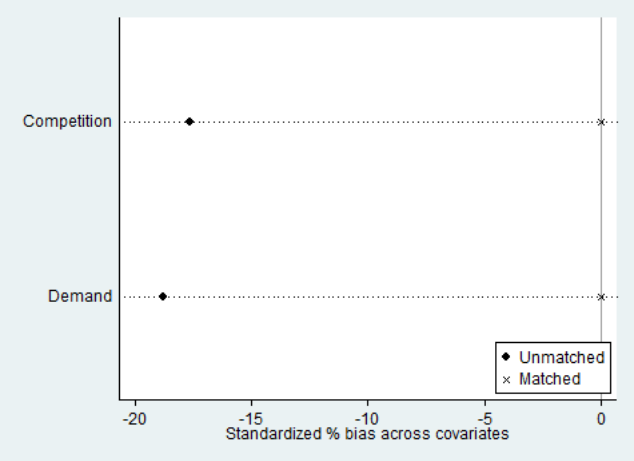
(c) Treatment: entry of outlet between 2006 and 2010



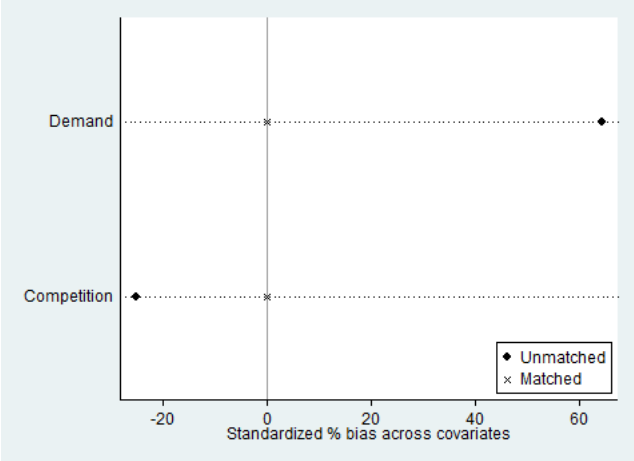
(d) Treatment: entry of outlet between 2010 and 2015

Figure 45: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using single nearest neighbour matching in year 2015, for each of the four treatment groups *NOTES*: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 800m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.

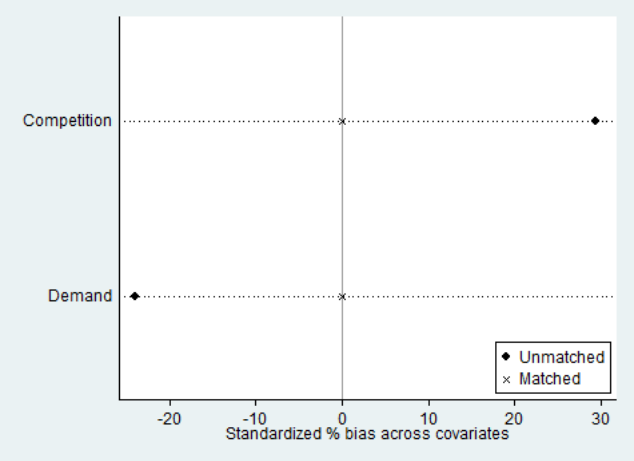
2.4.2 Using non-parametric local linear matching



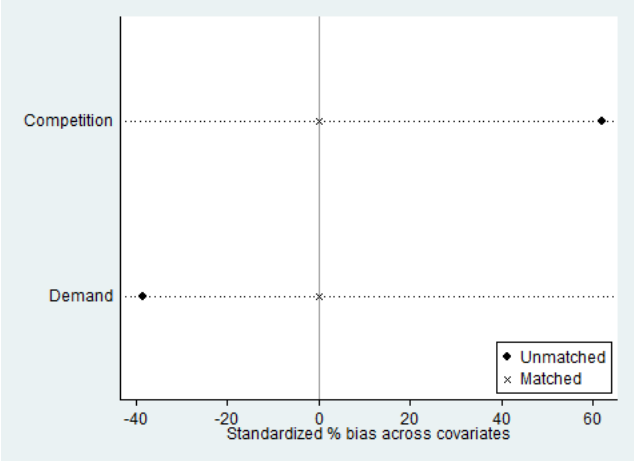
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015

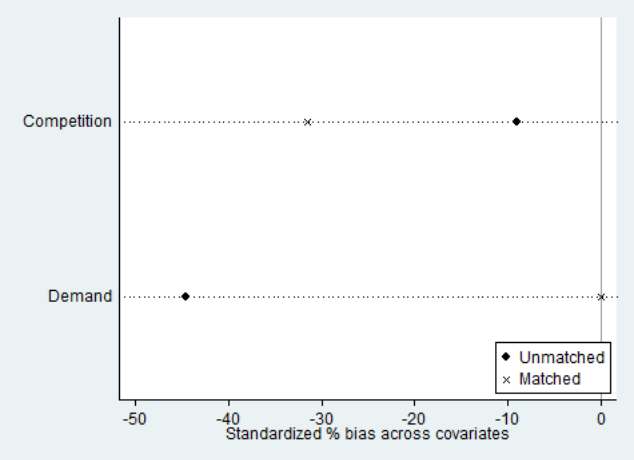


(c) Treatment: entry of outlet between 2006 and 2010

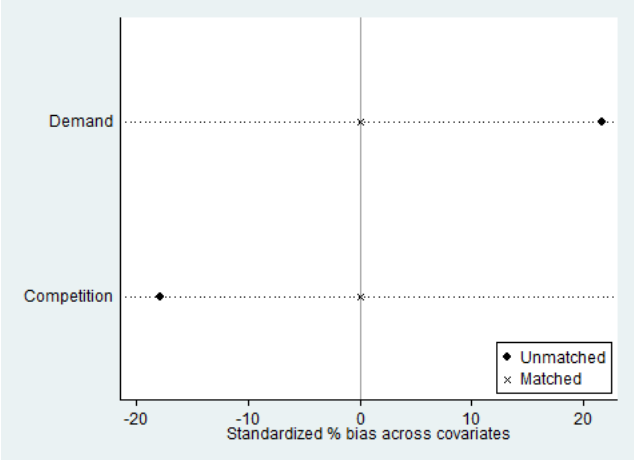


(d) Treatment: entry of outlet between 2010 and 2015

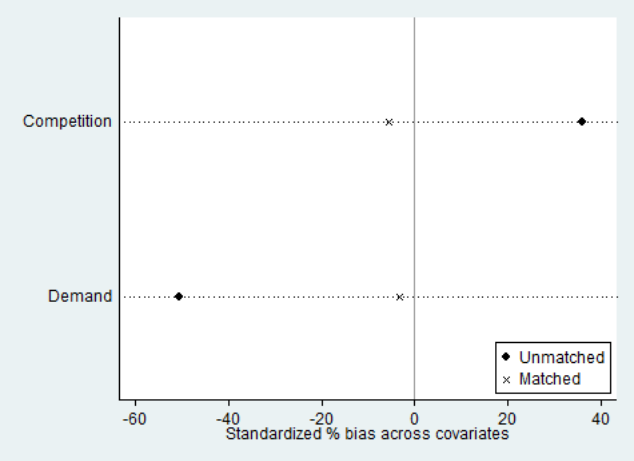
Figure 46: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2006, for each of the 4 treatment groups
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 800m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



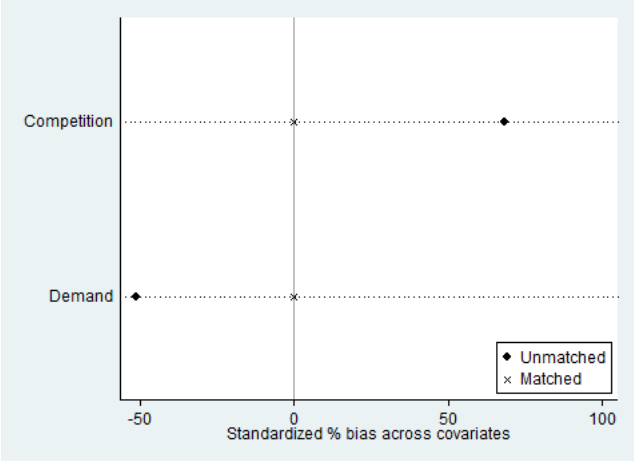
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



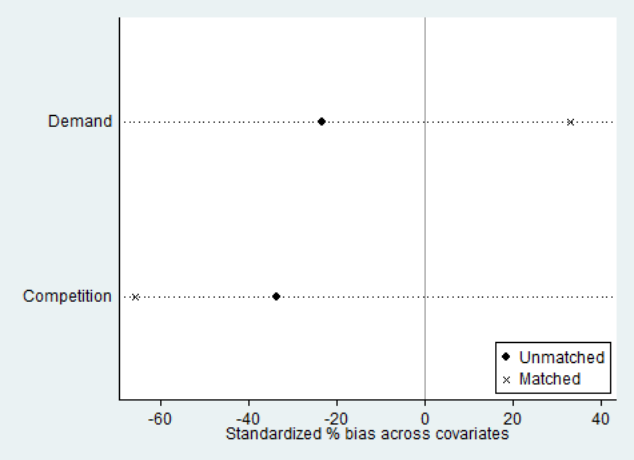
(c) Treatment: entry of outlet between 2006 and 2010



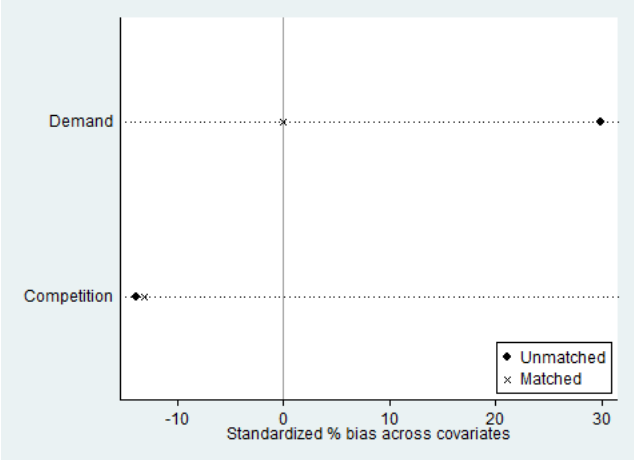
(d) Treatment: entry of outlet between 2010 and 2015

Figure 47: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2010, for each of the four treatment groups

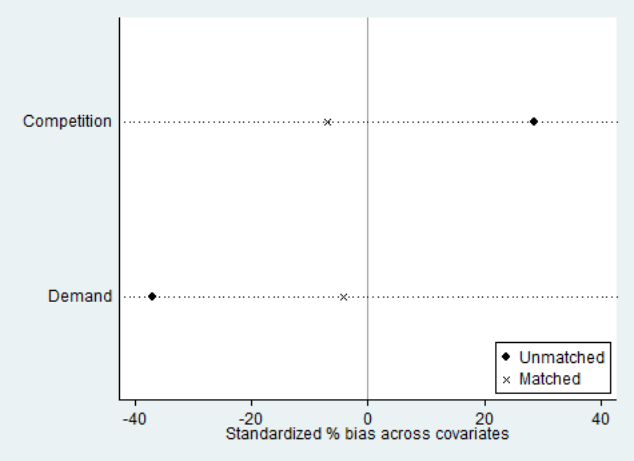
NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 800m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.



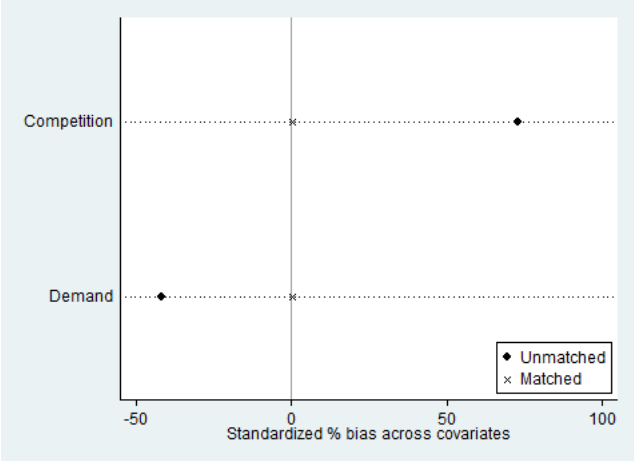
(a) Treatment: entry of supermarket between 2006 and 2010



(b) Treatment: entry of supermarket between 2010 and 2015



(c) Treatment: entry of outlet between 2006 and 2010



(d) Treatment: entry of outlet between 2010 and 2015

Figure 48: Dot charts assessing the standardized % bias across covariates in the unmatched and matched samples, when using non-parametric local linear matching in year 2015, for each of the four treatment groups

NOTES: `Competiton` measures the pre-liberalisation level of competitive pressure faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of the number of retailers within a 800m-radius around each retailer, as of 2006. `Demand` measures the pre-liberalisation level of demand faced by a retailer. It takes integer values between 1 and 5, for each of the quintiles of the distribution of resident population in the Census tract where the retailer is located, as of 2001.