Appendix

A1 Comparison of costs for different heating systems

The first paragraph and the table are copied from the online appendix of Germeshausen et al. (2022) and describe the calculation of the cost of compliance.

"The relative attractiveness of investing in renewable heating sources depends on the cost of doing so compared to alternatives. We have compiled an overview of the relative costs based on the evaluation reports (Langniß et al., 2010; Stuible et al., 2014) on the Market Incentive Program commissioned regularly by the BAFA, shown in Table A.2. The calculations are based on a home with an annual heating demand of 52,625.5 kWh (unrenovated) and 23,988.4 kWh (renovated). The table compares a gas heating system supplying the full heating energy demand to an alternative where the heating energy demand is covered by one of three renewable technologies funded by the MAP: a pellet stove, a heat pump, and finally a gas heating system supplemented by a solar thermal collector providing 10-15 % of the heating energy demand. All assumptions are listed in the appendix of the evaluation reports. General assumptions include an assumption of a 4.5 % interest rate and a lifetime for the installation of 18 years. The full gas heating system is found to be the cheapest alternative for all years except 2008 and for an unrenovated home in 2009. The consumer price of gas was tied to that of oil until 2010. After the decoupling the price declined and has been rising at a slower pace than the electricity price. The electricity price has increased substantially over the period. These price evolutions are shown in the table in the energy costs per kWh for each of the heating technologies."

We next took these estimated cost differentials and calculated the net present value of the difference in costs over a life time of 18 years at the assumed interest rate of 4.5 % for each of the years from the evaluation to create a range of compliance costs. There is considerable uncertainty about the actual NPV of compliance cost since this depends on specifics of the condition of the house (e.g. degree of insulation).

Table A2: Economic viability of heating technologies, example

	2008		2009		2011		2012		2013	
	Unrenov.	Renov.	Unrenov.	Renov.	Unrenov.	Renov.	Unrenov.	Renov.	Unrenov.	Renov.
Gas										
Annual total costs (*euro*)	7,137	4,123	6,367	**3,772**	**5,567**	**3,355**	**5,886**	**3,618**	**6,426**	**3,901**
Energy costs (*euro/kWh*)	0.124	0.141	0.11	0.129	0.096	0.115	0.102	0.124	0.111	0.134
Subsidy (*euro/kWh*)	0	0	0	0	0	0	0	0	0	0
Biomass (Pellet)										
Annual total costs (*euro*)	7,530	5,059	8,271	5,426	8,051	5,274	7,619	5,177	8,009	5,436
Energy costs (*euro/kWh*)	0.130	0.173	0.143	0.186	0.139	0.180	0.132	0.177	0.138	0.180
Subsidy (*euro/kWh*)	0.004	0.008	0.004	0.008	0.004	0.008	0.004	0.008	0.004	0.008
Air-to-water heatpump										
Annual total costs (*euro*)	**5,698**	**3,880**	**5,977**	4,110	6,298	4,192	8,330	5,114	9,103	5,605
Energy costs (*euro/kWh*)	0.099	0.133	0.103	0.141	0.109	0.143	0.144	0.175	0.157	0.192
Subsidy (*euro/kWh*)	0.002	0.005	0.002	0.005	0.002	0.003	0.002	0.004	0.002	0.004
Flat plate collector (Solar) (14 sqm)										
Annual total costs (*euro*)	6,796	4,954	7,592	5,081	7,033	4,875	6,687	4,466	7,185	4,708
Energy costs (*euro/kWh*)	0.118	0.170	0.131	0.174	0.122	0.167	0.116	0.153	0.124	0.161
Subsidy (*euro/kWh*)	0.005	0.009	0.002	0.005	0.003	0.005	0.002	0.004	0.002	0.004

Notes: The table summarizes information on costs across heating technologies based on biannual evaluation reports to the BAFA available for the years 2008-2009 and 2011-2013. Numbers for 2010 were unfortunately not available. The calculations are based on a house with an annual heating demand of 52,625.5 kWh (unrenovated) and 23,988.4 kWh (renovated). Total annual costs include necessary investments in the building required for the relevant technologies. For the case of solar, additional gas heating to cover the residual heating demand is included. There are changes over time both in the investment costs but also in the fuel costs and the subsidy size. In particular, gas prices in Germany declined after 2010, whereas electricity prices have been increasing over the whole period. The cheapest option based on annual total costs is emphasized in bold for each year and renovation status. With the exception of 2008, heating with gas is the cheapest option across the board. *(The table is copied from the online appendix of Germeshausen et al (2022).)*

A2 Bias-correction

We apply the bias-corrected matching estimator from Abadie and Imbens (2011). To this purpose we define the conditional expected price of a home in Baden-Wuerttemberg given its attributes *had it been located in the neighboring state instead* as $\mu_0(X_{itk})$:

$$\mu_0(X_{itk}) = E\left[P^0_{itk}|X_{itk}\right] \tag{7}$$

The conditional expected price is approximated using a linear model:

$$\hat{\mu}_0\left(X_{jtk}\right) = X_{jtk}\hat{\theta}_{w=0}, \tag{8}$$

where $\theta_{w=0}$ is estimated using weighted OLS based on the all control homes in the matched sample and the weight is given by the frequency with which the home is used as a match. With the estimated $\hat{\theta}_{w=0}$ in hand, the conditionally expected price of homes within Baden-Wuerttemberg is predicted:

$$\hat{\mu}_0(X_{itk}) = X_{itk}\hat{\theta}_{w=0}. \tag{9}$$

The bias-adjusted matching estimator ($\hat{P}^{(itk)}$) amends the simple matching estimator $P^{(itk)}$ by including the correction terms above:

$$P^{OLD,bcm}_{i,t} = P_{itk} - \frac{1}{J}\sum_{j=1}^{J}\hat{P}^{(itk)}_j,$$

replacing $\hat{P}^{(itk)}$by its parts:

$$P^{OLD,bcm}_{i,t} = P_{itk} - (\frac{1}{J}\sum_{j=1}^{J}P^{(itk)}_j + \hat{\mu}_0(X_{itk}) - \hat{\mu}_0\left(X_{jtk}\right))$$

A similar procedure is used to recover bias-corrected estimates of the treatment effect for new homes, $P^{NEW,bcm}_{i,t}$. All estimates are then stacked into the vector P^{bcm}_t of length $N_t + \widetilde{N}_t$.

A3 Genetic matching

To control for differences in observable characteristics we use the method of genetic matching as developed by Diamond and Sekhon (2013). It is a form of nearest neighbor Mahalanobis distance matching with replacement and weighting of the individual variables:

$$GMD(X_i, X_j, W) = \sqrt{(X_i - X_j)^T (S^{-1/2})^T W S^{-1/2} X_i - X_j)}.$$

The weights W of covariates X are determined by minimizing a loss function to achieve covariate balance. Our loss function is defined as the largest individual discrepancy based on p-values from a Kolmogorov-Smirnov test for differences in distributions and paired t-tests for each variable.

In addition to QQ-plots, we compute standardized mean differences, i.e. the difference from treated and untreated houses divided by the standard deviation of the treated houses, on all matching variables, which can be found in the following sections of the appendix. Matching reduces these differences for almost all variables in all years and for new and old houses. Although this result becomes evident from the alignment in distributions between treated and control houses as shown by the QQ-plots, the mean values may provide a quick assessment of the improvements. Furthermore, the standardized mean differences illustrate that characteristics in the sample may vary over the years, underlining the importance of analyzing the years separately.

The summary statistics for the matched sample pooled across all three years are shown in tables 5 and 6. The sample characteristics are very similar for the matched sample compared to the full sample characteristics shown in the main text.

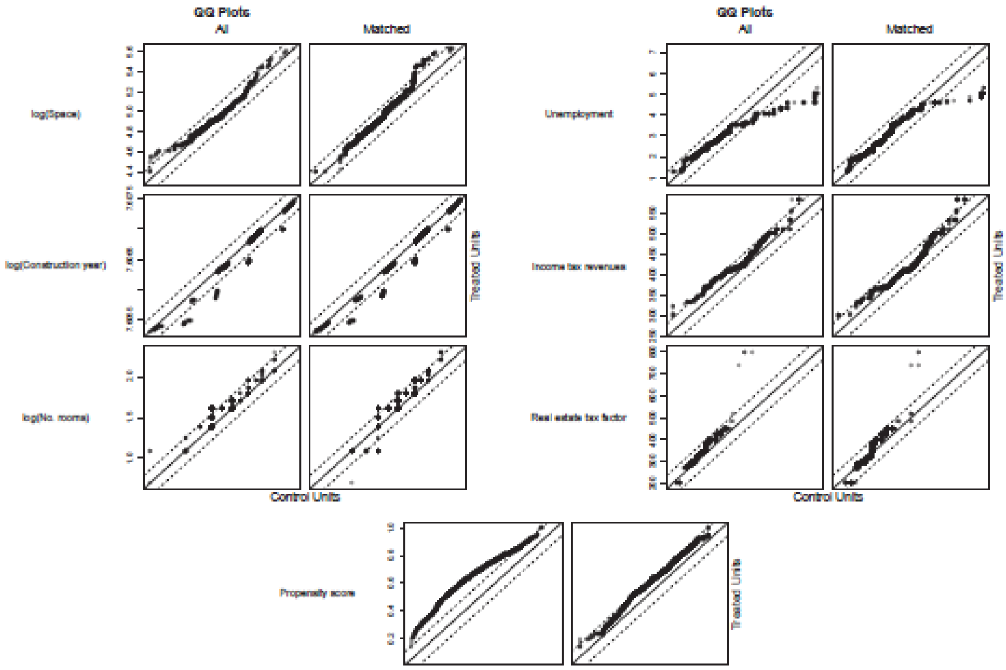
Variable	Min	Median	Mean	Max	N
Price [EUR]	65,000	273,700	290,457	885,000	24,311
Space [m2]	30	147	156	287	24,311
Year of construction	1901	1985	1983	2016	24,311
No. of rooms	1.0	5.5	5.7	10.0	24,311
Unemployment [percent]	1.00	2.80	2.96	7.20	24,311
Income Tax Revenues [EUR per capita]	260	447	447	636	24,311
Real Estate Tax Factor [percent]	150	350	353	800	24,311

Table 5: Genetic matching: Summary statistics: Numeric variables

Notes: The table shows the summary statistics for the numerical variables describing the matched sample when pooled for all three years. A comparison to table 1 reveals only very minor changes in the sample summary statistics.

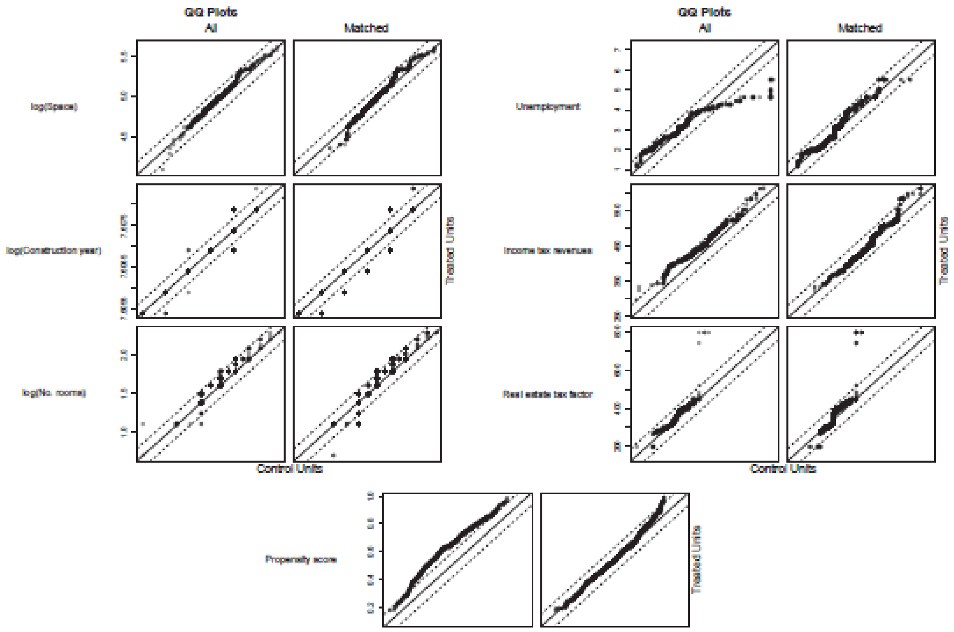
A4 QQ-plots: New houses

Figure 4: QQ-Plots: Treatment and control new houses in all four states: 2012



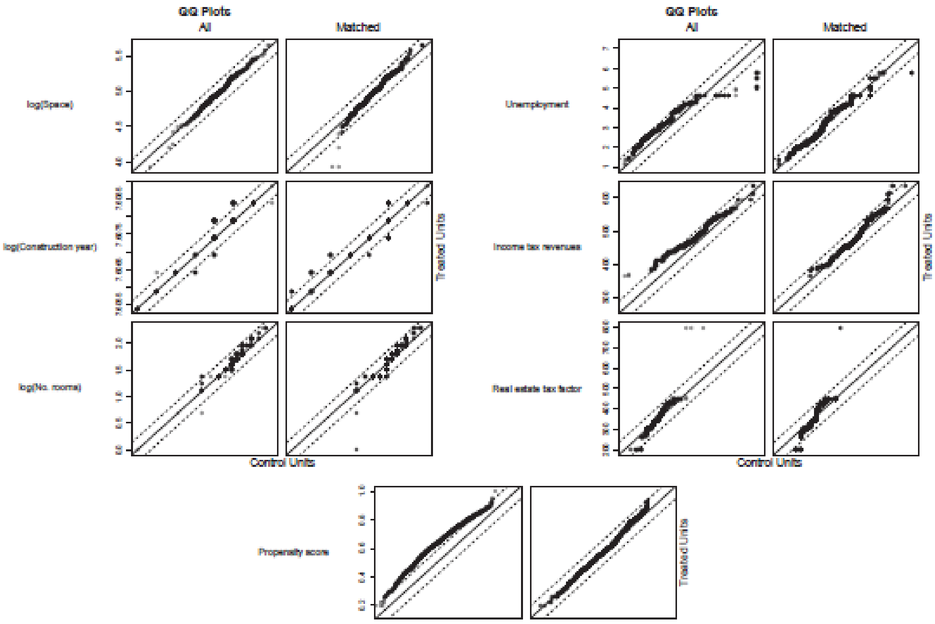
Notes: Based on own computations. The figure shows the quantile-quantile (QQ) plots for the different continuous matching variables in the original and matched sample for *new* houses in the four states (Baden-Wuerttemberg, Rhineland Palatinate, Hesse and Bavaria) for the year 2012.

Figure 5: QQ-Plots: Treatment and control new houses in all four states: 2013



Notes: Based on own computations. The figure shows the quantile-quantile (QQ) plots for the different continuous matching variables in the original and matched sample for *new* houses in the four states (Baden-Wuerttemberg, Rhineland Palatinate, Hesse and Bavaria) for the year 2013.

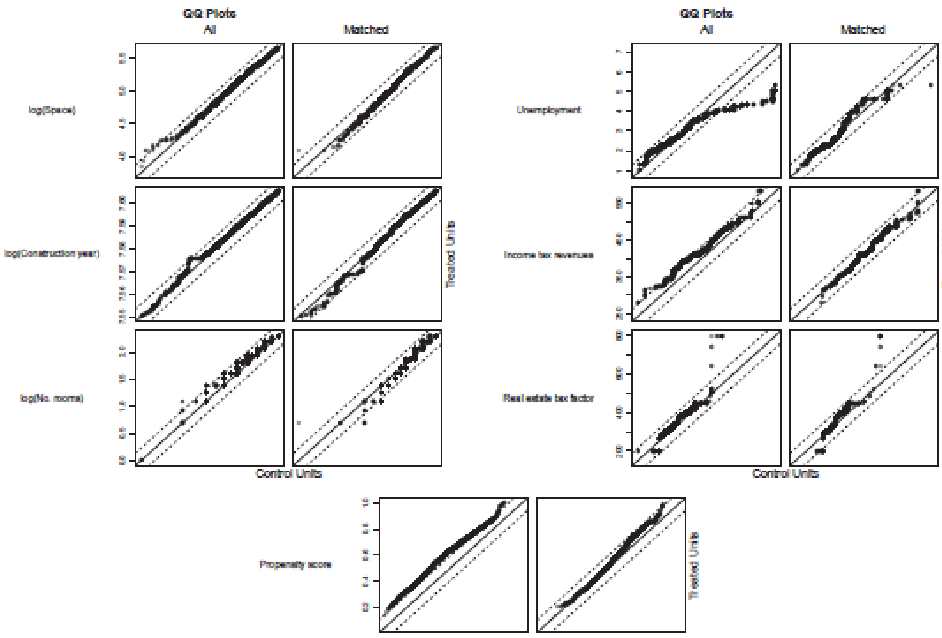
Figure 6: QQ-Plots: Treatment and control new houses in all four states: 2014



Notes: Based on own computations. The figure shows the quantile-quantile (QQ) plots for the different matching variables in the original and matched sample for *new* houses in the four states (Baden-Wuerttemberg, Rhineland Palatinate, Hesse and Bavaria) for the year 2014.

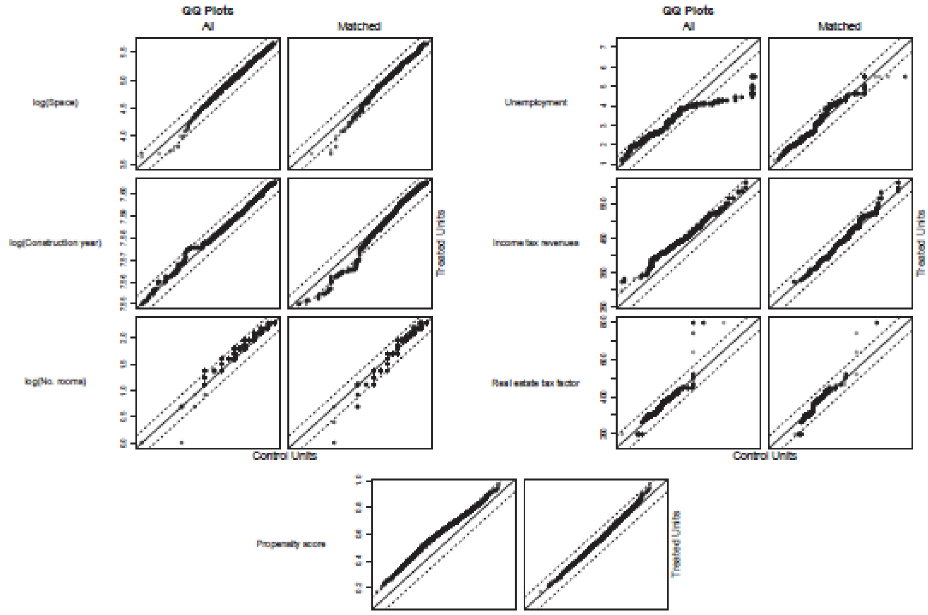
A5 QQ-plots: Old houses

Figure 7: QQ-Plots: Treatment and control old houses in all four states: 2012



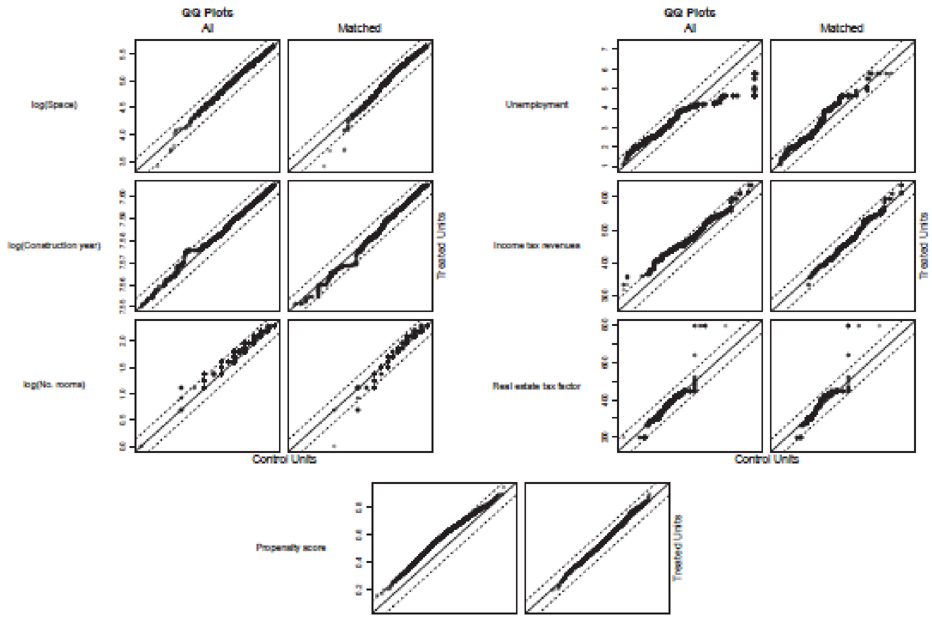
Notes: Based on own computations. The figure shows the quantile-quantile (QQ) plots for the different continuous matching variables in the original and matched sample for *old* houses in the four states (Baden-Wuerttemberg, Rhineland Palatinate, Hesse and Bavaria) for the year 2012.

Figure 8: QQ-Plots: Treatment and control old houses in all four states: 2013



Notes: Based on own computations. The figure shows the quantile-quantile (QQ) plots for the different continuous matching variables in the original and matched sample for *old* houses in the four states (Baden-Wuerttemberg, Rhineland Palatinate, Hesse and Bavaria) for the year 2013.

Figure 9: QQ-Plots: Treatment and control old houses in all four states: 2014



Notes: Based on own computations. The figure shows the quantile-quantile (QQ) plots for the different matching variables in the original and matched sample for *old* houses in the four states (Baden-Wuerttemberg, Rhineland Palatinate, Hesse and Bavaria) for the year 2014.

A6 Standardized mean differences: New houses

Variable	All	Matched	Variable	All	Matched
Semi-detached house	0.1214	0.0000	Border Rhineland-Palatinate	0.3451	0.0000
1-family house	−0.1416	0.0000	Border Bavaria	−0.1820	0.0000
Unsp. 1- or 2-family house	−0.1019	0.0000	log(Space)	0.0967	0.0876
Row house	0.1141	0.0000	log(Construction year)	−0.1196	−0.806
2-family house	−0.0365	0.0000	log(No. rooms)	0.1827	0.1079
Garden (Yes)	0.2201	0.0755	Unemployment	−0.2747	−0.0590
High quality equipment	0.1371	0.0383	Income tax revenues	0.4304	0.1362
Normal equipment	−0.0790	0.0180	Real estate tax factor	0.4012	0.2562
Normal building condition	0.0268	0.0269	Refurbishment after 2008	NaN	NaN
Building projected (Yes)	0.0228	0.0000	Propensity score	1.0203	0.3917

Notes: The table shows the standardized mean differences for the full and matched sample for new houses in the year 2012.

Table 7: Standardized mean differences for new houses - 2012

Variable	All	Matched	Variable	All	Matched
Semi-detached house	0.0278	0.0000	Border Rhineland-Palatinate	0.3880	0.0000
1-family house	−0.0724	0.0000	Border Bavaria	−0.3996	0.0000
Unsp. 1- or 2-family house	−0.0174	0.0000	log(Space)	0.1483	0.0672
Row house	0.0848	0.0000	log(Construction year)	0.0288	−0.0376
2-family house	0.0040	0.0000	log(No. rooms)	0.1433	0.0920
Garden (Yes)	0.0970	−0.0469	Unemployment	0.0192	0.0833
High quality equipment	0.1455	0.0050	Income tax revenues	0.5021	0.0295
Normal equipment	−0.0712	0.0924	Real estate tax factor	0.2103	0.1387
Normal building condition	0.0413	0.0548	Refurbishment after 2008	NaN	NaN
Building projected (Yes)	0.0358	0.0000	Propensity score	0.8043	0.0939

Notes: The table shows the standardized mean differences for the full and matched sample for new houses in the year 2013.

Table 8: Standardized mean differences for new houses - 2013

Variable	All	Matched	Variable	All	Matched
Semi-detached house	0.1911	0.0000	Border Rhineland-Palatinate	0.3909	0.0000
1-family house	−0.2534	0.0000	Border Bavaria	−0.5013	0.0000
Unsp. 1- or 2-family house	0.0311	0.0000	log(Space)	0.0433	0.0153
Row house	0.0568	0.0000	log(Construction year)	0.0769	0.0000
2-family house	0.0806	0.0000	log(No. rooms)	0.0721	0.0441
Garden (Yes)	0.1777	−0.0324	Unemployment	0.2841	0.0310
High quality equipment	0.1166	0.0138	Income tax revenues	0.5059	0.1197
Normal equipment	−0.0082	0.0774	Real estate tax factor	0.0771	−0.0195
Normal building condition	0.0182	0.0331	Refurbishment after 2008	0.0384	0.0000
Building projected (Yes)	−0.0150	0.0000	Propensity score	0.7613	0.0640

Notes: The table shows the standardized mean differences for the full and matched sample for new houses in the year 2014.

Table 9: Standardized mean differences for new houses - 2014

A7 Standardized mean differences: Old houses

Variable	All	Matched	Variable	All	Matched
Semi-detached house	0.0922	0.0000	Border Rhineland-Palatinate	0.1348	0.0000
1-family house	−0.1799	0.0000	Border Bavaria	−0.1	0.0000
Unsp. 1- or 2-family house	0.0069	0.0000	log(Space)	0.109	−0.0091
Row house	0.0802	0.0000	log(Construction year)	0.065	−0.0337
2-family house	0.0691	0.0000	log(No. rooms)	0.1535	−0.0101
Garden (Yes)	−0.0343	−0.0733	Unemployment	−0.2521	0.0446
High quality equipment	−0.0525	0.0141	Income tax revenues	0.4999	0.0458
Normal equipment	0.0667	0.0076	Real estate tax factor	0.2497	0.2390
Normal building condition	0.0218	−0.0050	Refurbishment after 2008	0.0024	0.0000
Building projected (Yes)	0.0313	0.0000	Propensity score	0.7636	0.1986

Notes: The table shows the standardized mean differences for the full and matched sample for old houses in the year 2012.

Table 10: Standardized mean differences for old houses - 2012

Variable	All	Matched	Variable	All	Matched
Semi-detached house	0.1013	0.0000	Border Rhineland-Palatinate	0.125	0.0000
1-family house	−0.1349	0.0000	Border Bavaria	−0.0613	0.0000
Unsp. 1- or 2-family house	0.0088	0.0000	log(Space)	0.078	−0.0203
Row house	0.0571	0.0000	log(Construction year)	0.0406	−0.0700
2-family house	0.0195	0.0000	log(No. rooms)	0.154	−0.0106
Garden (Yes)	−0.0771	−0.0520	Unemployment	−0.2391	0.0532
High quality equipment	−0.0915	−0.1248	Income tax revenues	0.5297	0.0498
Normal equipment	0.0683	0.1175	Real estate tax factor	0.1035	0.0821
Normal building condition	0.1173	−0.0323	Refurbishment after 2008	−0.0341	0.0000
Building projected (Yes)	0.0004	0.0000	Propensity score	0.7081	0.0835

Notes: The table shows the standardized mean differences for the full and matched sample for old houses in the year 2013.

Table 11: Standardized mean differences for old houses - 2013

Variable	All	Matched	Variable	All	Matched
Semi-detached house	0.0996	0.0000	Border Rhineland-Palatinate	0.0515	0.0000
1-family house	−0.1786	0.0000	Border Bavaria	−0.0118	0.0000
Unsp. 1- or 2-family house	−0.0089	0.0000	log(Space)	0.0846	0.0306
Row house	0.0929	0.0000	log(Construction year)	0.0466	−0.0259
2-family house	0.0563	0.0000	log(No. rooms)	0.1742	0.0128
Garden (Yes)	−0.0663	−0.0585	Unemployment	−0.1242	0.2352
High quality equipment	−0.0857	0.0697	Income tax revenues	0.4967	0.0157
Normal equipment	0.0382	0.0311	Real estate tax factor	0.0165	0.0708
Normal building condition	0.1028	−0.0283	Refurbishment after 2008	−0.0088	0.0000
Building projected (Yes)	0.0345	0.0000	Propensity score	0.6351	0.0545

Notes: The table shows the standardized mean differences for the full and matched sample for old houses in the year 2014.

Table 12: Standardized mean differences for old houses - 2014

A8 Robustness check: standard hedonic regression

The results of estimating the hedonic regression in equation 1 without matching and the two step procedure are found in table 13.[15] We show only the coefficients for our variables of interest. The remaining coefficients show the expected signs for size of living area, construction year, etc. and are available from the authors upon request. The results are consistent with our main findings. We do not find evidence for a negative impact of the state mandate on prices of affected houses. Indeed the estimated coefficients are generally insignificant and positive, suggesting that there is no penalty in housing prices. However, we do find a (weakly) significant positive effect of the state mandate on housing prices for old houses with refurbishment in 2014 (at the 10 % level) consistent with a premium on houses already retrofitted. Since we do not observe whether a retrofitting is associated with exchanging the heating system this finding is inconclusive with regard to the effect of the mandate. These regressions are based on the full data set without genetic matching, which may give rise to biased estimates. In particular, old houses in Baden-Wuerttemberg in the full sample are typically located in more prosperous municipalities (higher income tax revenues), have more rooms and have more living space compared to old houses outside of Baden-Wuerttemberg.[16] All these factors are positively related with house prices and may cast doubt on whether these houses are experiencing similar trends.[17] In the matched samples, these differences are reduced substantially.

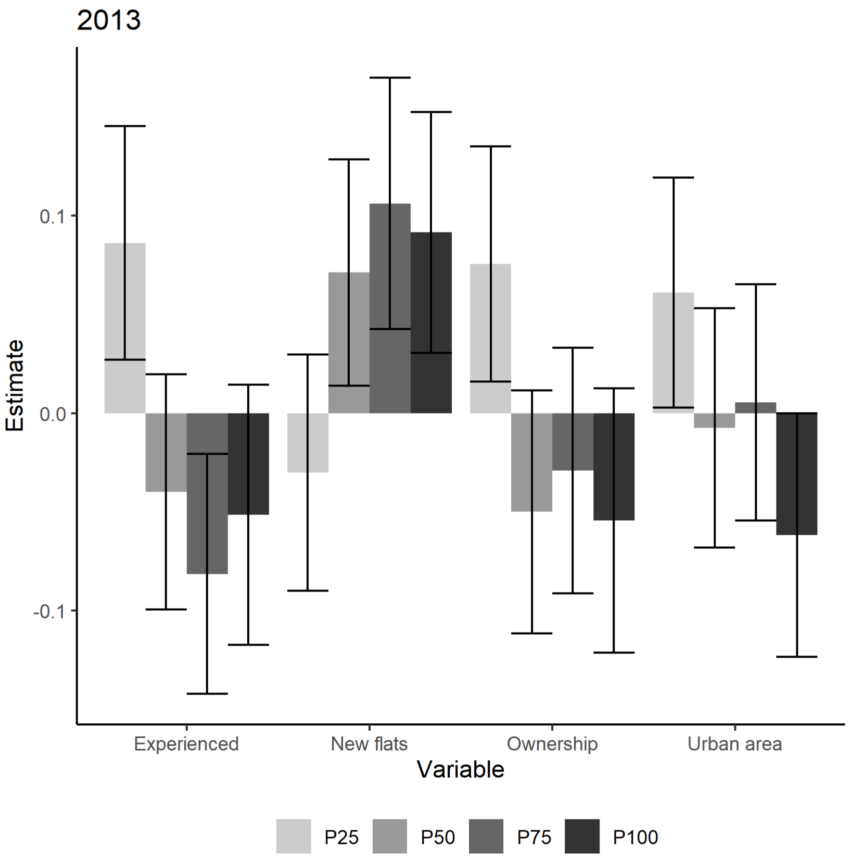
	(1)	(2)	(3)
	2012	2013	2014
BW x *OLD*	0.0229	0.0252	0.0124
	(0.0152)	(0.0156)	(0.0167)
BW x *Refurbishment*(>2008)	0.0052	0.0287	0.0374*
	(0.0250)	(0.0254)	(0.0211)
Observations	8,267	7,626	8,052
Adj. R^2	0.6148	0.6121	0.6038

Notes: The table shows the results for the interaction variable of "*BW*" with "*OLD*" and "*Refurbishment*(> 2008)", respectively, while controlling for a set of individual housing characteristics and municipality fixed effects for the three different years (2012-2014). Each year is estimated in a separate regression and using the full data set for the given year. The standard errors are in parentheses and clustered on municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: Results: Standard hedonic regression

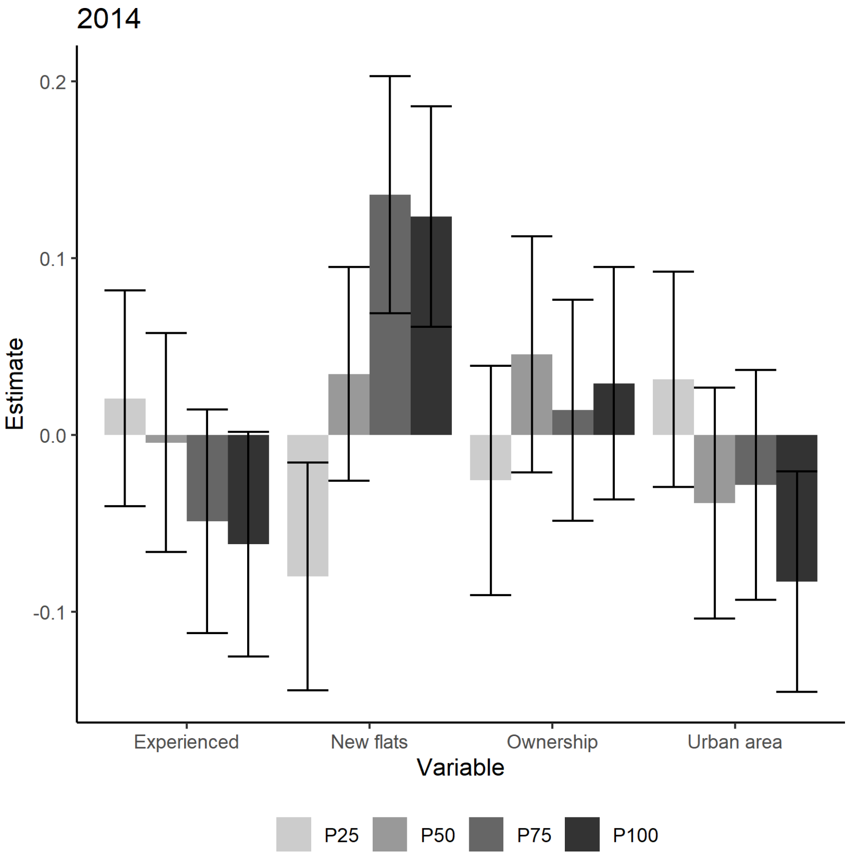
A9 Capitalization by municipality characteristics

Figure 10: Capitalization by municipality characteristics, 2013



Notes: The figure displays the point estimates and 95%-confidence interval of an augmented version of equation 6 for 2013. The single term *OLD* is replaced by interaction terms of *OLD* with 4 quantiles (0-25, 25-50, 50-75, and 75-100) of the municipality characteristic of the house sold described on the x-axis.

Figure 11: Capitalization by municipality characteristics, 2014



Notes: The figure displays the point estimates and 95%-confidence interval of an augmented version of equation 6 for 2014. The single term *OLD* is replaced by interaction terms of *OLD* with 4 quantiles (0-25, 25-50, 50-75, and 75-100) of the municipality characteristic of the house sold described on the x-axis.

	(1) 2012	(2) 2013	(3) 2014
OLD x *Experienced*$_{(p \leq 25)}$	0.0831***	0.0862***	0.0208
	(0.0279)	(0.0302)	(0.0311)
OLD x *Experienced*$_{(25<p \leq 50)}$	−0.0808***	−0.0398	−0.0042
	(0.0293)	(0.0304)	(0.0316)
OLD x *Experienced*$_{(50<p \leq 75)}$	−0.0878**	−0.0814***	−0.0488
	(0.0292)	(0.0310)	(0.0323)
OLD x *Experienced*$_{(75<p \leq 100)}$	−0.1193***	−0.0515	−0.0616*
	(0.0307)	(0.0336)	(0.0324)
Refurbishment(>2008) x *Experienced*$_{(p \leq 25)}$	−0.0007	0.0770	0.0623
	(0.0390)	(0.0455)	(0.0413)
Refurbishment(>2008) x *Experienced*$_{(25<p \leq 50)}$	0.0240	−0.0594	−0.0085
	(0.0564)	(0.0595)	(0.0481)
Refurbishment(>2008) x *Experienced*$_{(50<p \leq 75)}$	−0.0305	−0.0964*	−0.0328
	(0.0491)	(0.0579)	(0.0526)
Refurbishment(>2008) x *Experienced*$_{(75<p \leq 100)}$	0.0340	−0.1016	−0.1045**
	(0.0512)	(0.0620)	(0.0484)
Observations	5,419	5,154	5,280
Adj. R^2	0.23	0.25	0.22

Notes: The table shows the results for the dummy variable of "*OLD*" and "*Refurbishment*(> 2008)", both interacted by four bins of the share of experienced people (population above 50 years) in the municipality "Experienced", while controlling for a set of individual housing characteristics and municipality fixed effects for the three different years (2012-2014). Each year is estimated in a separate regression. The standard errors are in parentheses and clustered on municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: Results: Capitalization by experience

	(1) 2012	(2) 2013	(3) 2014
OLD x new flats$_{(p\leq25)}$	−0.0565**	−0.0302	−0.0800**
	(0.0263)	(0.0305)	(0.0329)
OLD x new flats$_{(25<p\leq50)}$	0.0156	0.0713**	0.0346
	(0.0280)	(0.02925)	(0.0308)
OLD x new flats$_{(50<p\leq75)}$	0.1251***	0.1063***	0.1360***
	(0.0298)	(0.0324)	(0.0342)
OLD x new flats$_{(75<p\leq100)}$	0.1015***	0.0916***	0.1237***
	(0.0276)	(0.0311)	(0.0319)
Refurbishment(>2008) x new flats$_{(p\leq25)}$	−0.0278	−0.0684	−0.0508
	(0.0380)	(0.0464)	(0.0417)
Refurbishment(>2008) x new flats$_{(25<p\leq50)}$	−0.0319	0.0674	0.0024
	(0.0464)	(0.0549)	(0.0462)
Refurbishment(>2008) x new flats$_{(50<p\leq75)}$	0.0682	0.1101	0.1449***
	(0.0520)	(0.0679)	(0.0507)
Refurbishment(>2008) x new flats$_{(75<p\leq100)}$	0.0254	0.1078*	0.1933***
	(0.0566)	(0.0591)	(0.0527)
Observations	5,419	5,154	5,280
Adj. R^2	0.23	0.25	0.23

Notes: The table shows the results for the dummy variable of "*OLD*" and "*Refurbishment*(> 2008)", both interacted by four bins of new flats per capita in the municipality "new flats", while controlling for a set of individual housing characteristics and municipality fixed effects for the three different years (2012-2014). Each year is estimated in a separate regression. The standard errors are in parentheses and clustered on municipality level. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table 15: Results: Capitalization by new flats per capita

	(1) 2012	(2) 2013	(3) 2014
OLD x $ownership_{(p\leq 25)}$	0.0302	0.0756**	−0.0256
	(0.0265)	(0.0304)	(0.0331)
OLD x $ownership_{(25<p\leq 50)}$	−0.0282	−0.0500	0.0457
	(1.1415)	(0.0314)	(0.0341)
OLD x $ownership_{(50<p\leq 75)}$	−0.0270	−0.0290	0.0141
	(0.0287)	(0.0317)	(0.0318)
OLD x $ownership_{(75<p\leq 100)}$	−0.0228	−0.0544	0.02937
	(0.0310)	(0.0342)	(0.0335)
$Refurbishment(>2008)$ x $ownership_{(p\leq 25)}$	0.0137	0.0675	0.0148
	(0.0381)	(0.0429)	(0.0417)
$Refurbishment(>2008)$ x $ownership_{(25<p\leq 50)}$	0.0255	−0.0980	0.0068
	(0.0510)	(0.0597)	(0.0498)
$Refurbishment(>2008)$ x $ownership_{(50<p\leq 75)}$	−0.0639	−0.0971*	0.0021
	(0.0518)	(0.0565)	(0.0477)
$Refurbishment(>2008)$ x $ownership_{(75<p\leq 100)}$	−0.0120	−0.0487	0.0583
	(0.0521)	(0.0607)	(0.0518)
Observations	5,419	5,154	5,280
Adj. R^2	0.22	0.25	0.22

Notes: The table shows the results for the dummy variable of "*OLD*" and "*Refurbishment*(> 2008)", both interacted by four bins of share of home ownership in the municipality "ownership", while controlling for a set of individual housing characteristics and municipality fixed effects for the three different years (2012-2014). Each year is estimated in a separate regression. The standard errors are in parentheses and clustered on municipality level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 16: Results: Capitalization by ownership rates

	(1) 2012	(2) 2013	(3) 2014
OLD x urban area$_{(p\leq 25)}$	0.0014	0.0611**	0.0317
	(0.0279)	(0.0297)	(0.0311)
OLD x urban area$_{(25<p\leq 50)}$	0.0153	−0.0074	−0.0385
	(0.0304)	(0.0309)	(0.0333)
OLD x urban area$_{(50<p\leq 75)}$	0.0616	0.0055	−0.0281
	(0.0303)	(0.0305)	(0.0331)
OLD x urban area$_{(75<p\leq 100)}$	−0.0270	−0.0617*	−0.0829***
	(0.0288)	(0.0315)	(0.0318)
Refurbishment(>2008) x new flats$_{(p\leq 25)}$	−0.0002	−0.0225	0.0990**
	(0.0415)	(0.0505)	(0.0460)
Refurbishment(>2008) x urban area$_{(25<p\leq 50)}$	0.0442	0.0099	−0.0788
	(0.0546)	(0.0607)	(0.0544)
Refurbishment(>2008) x urban area$_{(50<p\leq 75)}$	−0.0249	0.0882	−0.0554
	(0.0535)	(0.0678)	(0.0548)
Refurbishment(>2008) x urban area$_{(75<p\leq 100)}$	−0.0133	0.0300	−0.1318***
	(0.0515)	(0.0593)	(0.0533)
Observations	5,419	5,154	5,280
Adj. R^2	0.22	0.25	0.23

Notes: The table shows the results for the dummy variable of "*OLD*" and "*Refurbishment*(> 2008)", both interacted by four bins of new flats per capita in the municipality "new flats", while controlling for a set of individual housing characteristics and municipality fixed effects for the three different years (2012-2014). Each year is estimated in a separate regression. The standard errors are in parentheses and clustered on municipality level. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table 17: Results: Capitalization by urbanity

Variable	Min	P25	Median	Mean	P75	Max	N
Experienced population [percent]	33.1	39.5	40.9	41.3	43.0	49.0	15,946
Urban area [percent]	0.0	0.6	1.4	2.5	4.1	11.6	15,946
Ownership rate [percent]	27.5	48.3	56.2	54.4	62.0	84.1	15,946
New flats [per 1,000 inhabitants]	0.0	1.7	2.4	2.8	3.7	10.7	15,946

Table 18: Summary statistics: Municipality characteristics

Notes: The table shows the summary statistics for the variables used in the heterogeneous analyses when pooled for all three years.

Figure 12: Correlation among municipality characteristics, 2012-2014

Notes: The figure displays coefficient of correlations among the municipality characteristics used in the heterogeneity analyses. The colors show the direction of relationship with dark red (blue) pointing to a negative (positive) relationship between the variables.