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Structured Abstract:

Home ownership rates in Germany have increased substantially in recent years. However, the rate still remains on a very low level and shows significant differences across regions. Generally, the decision between renting and buying a house or a flat depends on multiple individual factors like income or risk awareness. Additionally, heterogeneous developments in the real estate markets, indicated by prices, rents or taxes, cause differences in the profitability and the costs of homeownership and renting. The following study analyzes the tenure choice in 402 administrative districts in Germany with the help of an indicator measuring the relative profitability of letting and buying. The indicator is calculated by incorporating the average rental price and the different tax treatment of tenure choice, the property prices for different administrative districts in Germany, the interest and maintenance costs (user costs of housing). As tax benefits of landlords are passed through to tenants if competition is severe, the indicator can be used to measure the relative profitability of renting and buying. By using a panel model, we investigate whether the demand for buying or renting, measured by search profiles in the leading internet platform for private real estate transactions in Germany – ImmobilienScout 24 - is shifted by changing profitability of letting and buying. Control variables like vacancy rates, demographics or employment validate the robustness of the model and account for spatial autocorrelation. Results show, that households react on changing profitability and adjust their tenure choice partially to economic factors.

Keywords:
home ownership, tenure choice, taxation of housing

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JEL R15, R31, R32

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Running Heads:

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1. Introduction

In European comparison, the homeownership rates in Germany are one of lowest of all countries. There are several reasons explaining this phenomenon (Voigtländer, 2009). One reason can be found in the generous tax treatment of letting in the past. However, tax privileges have been eliminated, low interest rates still enhance owner-occupation in general.

We want to test whether households react on this incentive. Therefore a unique and so far unused data source, provided by Immobilienscout24, the leading platform for real estate exchange, is used in order to display recent households' activities. This is the first study to examine tenure choice in Germany for all 402 administrative districts. A theoretically developed indicator, which incorporates the relative attractiveness of letting and owner occupation, is integrated in an empirical model to show, that households react on tax incentives as well as the historically low interest rates. The study is structured as follows. First we present a broad literature review. In chapter 3 the taxation of owner-occupied housing and private letting is described before the theoretical framework is explained in chapter 4. Descriptive statistics are given in chapter 5, chapter 6 includes the empirical results and chapter 7 gives some concluding remarks.

2. Literature Review

Voigtländer (2009) examines the differences between the German Housing market and other housing markets across Europe. He identified five factors affecting the comparably low rate in homeownership. The relative size and quality of the rental housing market segment is found to be higher than in other European countries. With a share of about 70 percent loan-to-value the terms of financing are rather strict combined with long fixed interest rates as the usual characteristic of housing loans. Bentzien, et al. (2012) analysed german micro data constating the average German would have to sacrifice a great deal of his income and thus non-housing consumption in order to achieve homeownership. Under relative terms the costs of owned and rented units are in favour of rented housing. Another important factor favouring rented housing over owner occupied living can be found in the disadvantaged tax treatment between owner occupied living and rented dwellings.

The seminal work of Poterba (1984) emphasizes homeownership demand into a neoclassical general competitive equilibrium model. The novelty of this model is that it accounts for the duality of owner-occupied housing, as it incorporates both, the features of a consumption good and a durable investment good. Thereby the deduction of the so-called user cost of housing is rendered possible. Whereas the cost of rental

housing is simply rent per time period, the user costs of ownership incorporate the apportioned net costs of housing for homeowners. The product of the capital invested and the homeowner's capital costs, including interest rates, maintenance, property tax and expected capital gains on the house. A central assumption by Poterba, deducted by the model framework, is that because households compare the user cost of housing against the cost of rental housing, there must always be a close interdependency between the markets for owner-occupied and rental housing. In perfect competitive markets, the market price of renting will equal the cost of owner-occupied living. Stating this equilibrium condition, households would be indifferent between rented or owner-occupied housing, but only individual preferences would lead to either one form of housing or the other. Public policy may alter the tax policy and thereby change the relative profitability of the different housing choices.

More recent models go beyond neoclassical theory and put more emphasis on the idiosyncratic imperfections of housing markets. The most common imperfections are uncertainty, transaction and coordination cost or credit constraints[1]. According to Henderson and Ioannides (1983) the individual household's risk aversions have a crucial role within the decision of homeownership. Accordingly, more risk averse households prefer to rent rather than to buy their home. Rental Housing is thus a form of contract easing the coordination problems associated housing investment decisions. A key focus of modern tenure choice models is on borrowing constraints in housing finance. As house prices generally exceed rental payments by far, households depend on the possibilities of external finance. However, lenders oblige to a down payment in order to minimize credit default risks. Thus, households rent until they finished saving sufficient equity for the down payment (Stone, 2006).

Lerbs and Oberst (2014) employed a cross-sectional data analysis in 96 German regions to analyze the interregional variability of homeownership rates. The relative price of owning versus renting and the affordability of owner-occupied housing play a crucial role in explaining why homeownership rates vary substantially among Germany.

The inter-country differences in the likelihood and timing of housing and tenure choice dynamics between Germany and the U.S. has been investigated by Boehm and Schlottmann (2014). With the help of country specific individual micro data, data for house price appreciation and the relative cost of owning to renting they were able to ascertain, that the probability of homeownership is much lower for Germans than in the US. Additionally it is much more unlikely for Germans who initially achieved homeownership returning to rental tenure or moving to another home.

[1] For a comprehensive overview of these models is given by Hubert (2006)

3. Taxation of housing

Home owners can generally decide between two ways of usage of their home: they can use it themselves and save the rent for another accommodation or they can let it to tenants, receive a rent and live elsewhere. In dependence of the chosen usage, the taxation of the property is following very distinct tax regulations. Within in the frame of a consumption good owner-occupied housing is tax free in Germany since the 1980s. On the one hand fictive yields in terms of imputed rents remain untaxed. On the other interest payments, maintenance expenses and property taxes are not deductible from the income tax base.

In contract to owner occupied property, private let home ownership is treated as an investment good. The yields in form of rents are liable for taxation. On the contrary, expenses for interest debts or maintenance costs are taxable deductible. Additionally, the owner is allowed to claim depreciations of the building as a tax exempt. After a 10-year holding period, capital gains are also not subject to taxation in case of noncommercial landlords (so-called *Spekulationsperrfrist*).

4. Theoretical Framework

In the following, the advantageousness of owner-occupation and letting is theoretically analyzed.

For owner occupation the return equation is as following:

(1)
$$R_O = \frac{-P + \sum_{n=1}^{N} \frac{RE - M - r*l*P - r*(1-l)*P}{(1+r)^n} + \frac{S}{(1+r)^n}}{P}$$

With R_O=Return owner-occupation, P=purchase price, RE=rent, M=maintenance, r= interest rate, l=loan-to-value-ratio, S=selling price

At first, the owner has to buy the property for a given price P. On the one hand the owner is achieving yields by using the property which are given by the saved imputed rents RE. On the other hand the owner is facing expenditures for maintenance costs M, interest payments for borrowed capital, given by the interest rate r, the loan-to-value ratio l and the purchase price P. Additionally the owner has to bear equity costs which can be interpreted as opportunity costs. After the use over period N the owner can sell the property for a price S. The running costs, the imputed rents as well as the selling price are discounted at rate r. The overall revenues and expenditures are finally divided by the purchase price and result in a final rent for owner-occupied housing. Due to reasons of complexity, it is assumed that the values are constant over time, which does not affect the relative advantageousness of buying or renting in the end.

The owners who let their accommodation have the following return equation:

$$R_L = \frac{-P + \sum_{n=1}^{N} \frac{RE - M - r*l*P - (RE - M - r*l*P - dr)*t - r*(1-l)*P}{(1+r)^n} + \frac{S}{(1+r)^n}}{P} \quad (2)$$

R_L=return letting, t=tax rate, dr=depreciation rate

Landlords and owner-occupier bear the same expenses for maintenance and interest payments. Landlords receive a rent by the tenants, which can be interpreted equally to the imputed rents by the owner-occupation, but the rent yields are taxed at the tax rate t. Tax deductible are the maintenance costs, the interest payments and the depreciation of the building. The remaining of the equation is equivalent to the return equation R_O of the owner-occupier.

It can be assumed that, under competitive market conditions, owners pass their tax advantages to their tenants. As a result the decision of owner-occupation or letting can be considered as a decision between renting or buying.

If R_O is equal to R_L the following equation results after a few transformations.

$$RE = dr + r*l*P + M \quad (3)$$

If the (imputed) rent is equal to the sum of the depreciation rate, interest payments and maintenance costs, the own usage of a property equates letting. Is the actual depreciation rate the same as the economical depreciation, neither buying nor renting is advantageous for both types of usage in equilibrium. If the rent is higher than the costs of owner-occupation, the owner occupation is more profitable, due to favorable tax regulations, and vice versa. Neither the tax rate nor the selling price have an influence on the relative profitability within the tenure choice. By assuming the date of sale is off the10-year holding period, the selling price is tax free and of no relevance as both parties do receive the same selling price. This is only valid if the landlord is a non-commercial household.

If equation three is divided by the purchase price P, a gross initial yield for renting and buying is obtained. Before the relative advantageousness can be calculated a few assumptions concerning key variables have to be made. The maintenance costs are set to be one percent of the purchase price on average. The depreciation rate of the building is two percent. If the value of the piece of ground is set to be 20 percent of the purchase price, the depreciation rate of the building is 1.6 percent of the purchase price. In 2013, the average interest rate for real estate credits was 2.76 percent with a fixed interest rate between five and ten years. This was the most frequent used form of financing in 2013 (Deutsche Bundesbank, 2014)[2]. The average loan-to-value ratio

[2] The average interest rates fort the remaining years considered in this analysis are shown in Table 1.

was 78 percent in the considered time period (Dr. Klein, 2014), which results in a gross initial yield of 4.75 percent at which households are indifferent between renting and buying (R_{EQ}). If the achieved return is above R_{EQ}, the purchase of the property is more profitable, whereas a return below R_{EQ} signals a renting decision to be superior.

With the help of purchase prices and rents for new lettings by *F+B Forschung und Beratung*[3] the gross initials yields can be calculated. Therefore the average rent per square meter per year is divided by the average price per square meter for a used accommodation. In order to account for uncertainty in the data and nonconformities of the property the decision whether to buy or to rent is expanded by a third category named *neutral*, which is defined for gross initial yields, which is less difference than +/- 0.5 percent of R_{EQ}. This consideration can be done for all 402 german counties between 2009 and 2013. The summary statistics are shown in table 1. In 2009, in only 7 percent of the german counties buying was more profitable than renting. In 2013, in already 27 percent of the german counties buying was favorable compared to only 22 percent of the german counties where renting had been more effective. The geographical distribution is shown in the Appendix A[4]. Especially in East Germany buying is the dominant decision for households.

Table 1 Relative advantageousness of renting and buying between 2009 and 2013 in Germany

	2009		2010		2011		2012		2013	
dr	1.6		1.6		1.6		1.6		1.6	
r	4.42		3.89		3.94		3.07		2.76	
l	78		78		78		78		78	
m	1		1		1		1		1	
R_{EQ}	6.05 ± 0,5		5.63 ± 0,5		5.67 ± 0,5		4.99 ± 0,5		4.75 ± 0,5	
	n	%	n	%	n	%	n	%	n	%
buy	28	7	54	13	52	13	100	25	108	27
neutral	82	20	140	35	122	30	215	53	205	51
rent	292	73	208	52	228	57	87	22	89	22

If the gross initial yield is divided by R_{EQ}, a Buy/Rent indicator results which is a proxy for the relative attractiveness of buying and renting. A value bigger than one can interpreted as an advantage for buying or owner-occupation, whereas a value smaller than one indicates an advantage for renting a home.

[3] F+B Forschung und Beratung is a german research institute, which is specialized in the research and data collection for real estate markets in Germany.
[4] For a brief discussion of spatial correlation see Appendix B.

(4)

$$indic = \frac{\frac{\mathrm{Re}}{P}}{R_{EQ}}$$

5. Descriptive statistics

The decrease of R_{EQ} is a sign, that owner-occupation and buying a property is becoming more and more attractive for german households. This can especially be attributed to the decreasing interest rates and the thereby lightened availability of external financing. As the considered time period is rather short and homeownership rates change, due to high transaction costs and tedious selection processes, rather slowly in time, the adaption in the homeownership rates is expected to be insignificant. Nevertheless it can be expected, that households react on the changing environment, show a increased interest in buying a property and adjust their behaviour in terms of screening the market. The website www.immobilienscout24.de is the leading internet platform connecting households for lettings as well as sales of real estate. Users are given the possibility to place searching profiles, either if they are looking for a rental contract or if they want to buy or sell an accommodation. In figure 1 the development of the inserted profiles for buying and renting are shown. Both curves show a remarkable increasing trend, but the buy profiles experienced a higher growth than the rent profiles.

Figure 1 Immobilienscout24: index rent and buy profiles between 2008 and 2013

6. Empirical Results

The developed indicator from equation 4 is used to explain the development of the ratio of buy request in relationship to the sum of all request. As an increase of the indicator describes an increase in the

attractiveness of buying, it is expected that the share of buy request will increase accordingly. Additional explanatory variables are included into the fixed effects model regressions.

$$ratio_{buy\ i,t}=\beta_0+\beta_1*indic_{i,t}+\beta_x*X+u_{i,t}$$

The results of the regression are shown in table 2. In column 1 the sum of requests is calculated only with apartment request, in column 2 detached houses are included. As expected the indicator is positive in sign and highly significant in both regressions. If the indicator increases by 1 percent, the share of buy requests increases by nearly 0.9 percentage points (column 2 0.6). In the period considered the indicator increased on average from 0.86 in 2009 to 1.02 in 2013 which is equal to a 18 percent increase. Thus, the ratio of requests increased due to higher relative attractiveness by 16.4 percentage points. The unemployment rate has a significant negative influence. The number of employed people and the GDP per person do have a significant effects, which are both marginal in their magnitude. The rate of unused property in the county also has a significant positive influence.

Table 2 Regression Results

OLS regression

	(1)	(2)
VARIABLES	$ratio_{buy}$	$ratio2_{buy}$
log_indic	0.0886***	0.0609***
	(0.0248)	(0.0160)
y	6.98e-07***	5.91e-07***
	(1.88e-07)	(1.24e-07)
unemp	-0.00237***	-0.00180***
	(0.000879)	(0.000602)
density	-5.20e-05	-4.82e-05
	(9.83e-05)	(7.62e-05)
L	8.84e-07***	6.65e-07***
	(2.61e-07)	(1.87e-07)
p_owner	8.92e-05***	7.19e-05***
	(2.18e-05)	(1.43e-05)
unused	0.342**	0.279**
	(0.173)	(0.115)
log_r	0.0712***	0.0283**
	(0.0207)	(0.0131)
Constant	0.217***	0.0690
	(0.0752)	(0.0507)
Observations	1,203	1,203
R-squared	0.226	0.395
Number of county	401	401

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7. Conclusion

The real estate market in Germany has changes tremendously since 2009. On the one hand rents and prices experienced an unusual increase, especially in the metropolitan areas, on the other hand the availability of housing credits for households is, due to the low interest rates, historically cheap. Additionally the tax treatment for owner-occupied housing is beneficial in comparison to renting, which makes buying a property more favorable than ever. The analysis presented in this paper showed, that households react on these incentives and adopt their screening behavior. A unique data set, by the leading real estate platform in Germany Immobilienscout24, was used which displays the households' tenure choice interests. The increasing willingness of households in buying will probably end up in increasing homeownership rates in Germany. This trend is especially persistent in East Germany.

Literature

Bentzien, Verena / **Rottke,** Nico / **Zietz,** Joachim, 2012, Affordability and Germany's low homeownership rate, in: International Journal of Housing Markets and Analysis, 5. Jg., Nr. 3, S. 289–312

Boehm, Thomas P. / **Schlottmann,** Alan M., 2014, The dynamics of housing tenure choice: Lessons from Germany and the United States, in: Journal of Housing Economics, 25. Jg., S. 1–19

Deutsche Bundesbank, 2014, Zeitreihen-Datenbanken. Makroökonomische Zeitreihen - Effektivzinssätze Banken DE / Neugeschäft / Wohnungsbaukredite an private Haushalte, anfängliche Zinsbindung über 5 bis 10 Jahre, http://www.bundesbank.de/Navigation/DE/Statistiken/Zeitreihen_Datenbanken/Makrooekonomische_Zeitreihen/its_list_node.html?listId=www_s11b_ph3 [3.4.2014]

Dr. Klein, 2014, Datenanfrage zu Indikatoren der Immobilienfinanzierung, http://www.drklein.de/ [4.4.2014]

Henderson, J. V. / **Ioannides,** Y. M., 1983, A Model of Housing Tenure Choice, in: American Economic Review, 73. Jg., Nr. 1, S. 98–113

Hubert, Franz, 2006, The Economic Theory of Housing Tenure Choice, in: Richard/McMillen (Hrsg.), A Companion to Urban Economics, Boston, S. 145–158

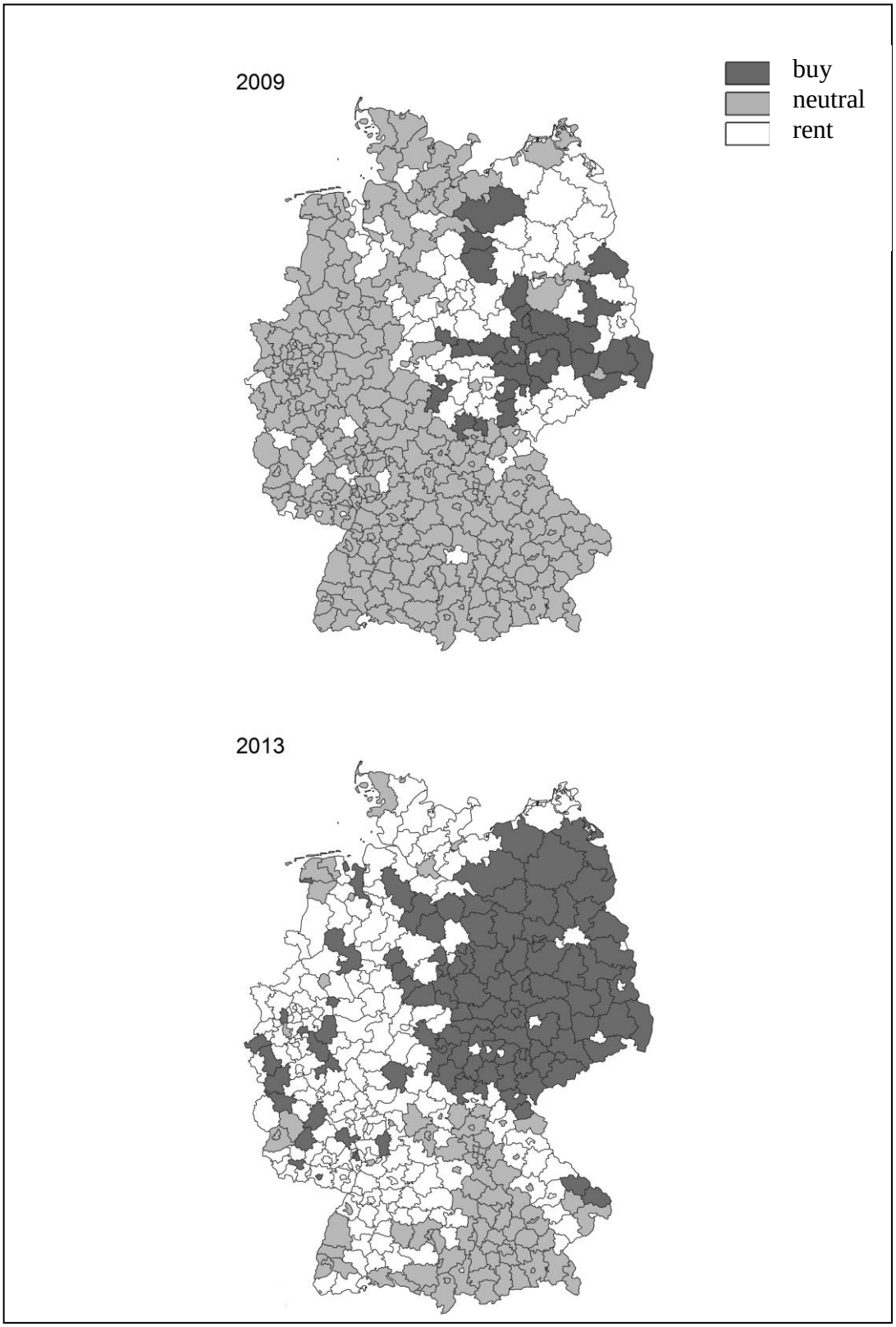
Lerbs, Oliver W. / **Oberst,** Christian A., 2014, Explaining the Spatial Variation in Homeownership Rates: Results for German Regions, in: Regional Studies, 48. Jg., Nr. 5, S. 844–865

Poterba, James M., 1984, Tax Subsidies to Owner-Occupied Housing: An Asset-Market Approach, in: The Quarterly Journal of Economics, 99. Jg., Nr. 4, S. 729

Stone, Michael E., 2006, What is Housing Affordability? The Case for the Residual Income Approach, in: Housing Policy Debate, 17. Jg., Nr. 1, S. 151–184

Voigtländer, Michael, 2009, Why is the German Homeownership Rate so low?, in: Housing Studies, 24. Jg., Nr. 3, S. 357–374

Appendix A – Spatial distribution of *Buy*, *Neutral* and *Rent*



source: Cologne Institute for Economic Research

Appendix B – Spatial autocorrelation