1 Introduction

A bursting real estate bubble can have dire consequences for economic activity in a country. Various crises in the past have demonstrated such a devastating link. The Global Financial Crisis did originate in the housing market in the US. With mortgage loans being spread across the financial system because of securitization, the slump in US house prices resulted in financial stress, which put the entire financial system at risk.

However, even in the most recent past, the US is by no means the only example where a collapse in real estate prices put a strain on real economic activity. Slumps in house prices contributed to the European Debt Crisis in many countries. The collapse of Irish property prices has been a severe liability for the country’s banking system. The rescue package, which aimed at ensuring financial stability, put the entire country’s public finances at risk. Spain has shared a similar fate. There, a boom in the construction sector and increasing house prices have been fueled by local Spanish banks, which are now struggling with a massive increase in doubtful loans after property prices have started to collapse in 2008.

While price bubbles in other countries have been inflating, real estate prices in Germany have been extraordinarily stable. Only since about 2010, when house prices in many other countries have still been declining, property prices in Germany increased considerably. Given this background, it is not surprising that the German real estate market has attracted considerable attention from policymakers as well as the general public. Two issues have been at the heart of the discussion. First, the dangers of an inflating real estate bubble, which could threaten prosperity in the long run. Second, the effect of increasing property prices on the wealth distribution. A common concern in the public debate is that increasing property prices could drive up rental prices such that tenants might be driven out of their
homes as they are not able to afford increased rental payments. This displacement, which often is referred to as gentrification, threatens to change the face of entire neighborhoods.

With respect to the dangers of a property price bubble, there do seem to be good reasons for increased property prices in Germany. The key argument is that Germany now faces a similar situation as e.g. Spain before 2008. With many countries in the European Monetary Union (EMU) still at the verge of a recession with low inflation and capacity utilization in Germany substantially higher than in the rest of the EMU, monetary policy can be expected to be expansionary in Germany in the years to come.

This of course has raised concerns that Germany might share the experience of blowing up a housing bubble that threatens financial stability. The Deutsche Bundesbank seems to take this thread seriously and analyzed property price increases since 2010. They conclude that increased prices seem justified given fundamental factors and hence, no evidence for an overvaluation of property prices in Germany as a whole (Deutsche Bundesbank 2013). Other studies come to similar conclusions. Budde and Micheli (2013) investigate time series properties of regional real estate prices and do not find indications for wide spread explosive behavior in property prices. The Projektgruppe Gemeinschaftsdiagnose (2012) finds no acute threat due to the build-up of a property price bubble for real economic activity and shows that recent price increases in the real estate market may be considered negligible in comparison to the experiences of other countries that were hit by a financial crisis.

However, careful monitoring of real estate prices seems to be a necessity to identify the buildup of a price bubble in real time. In recent years, a lot of work has been done to provide policymakers with the necessary tools. The German Statistical Office now publishes a quarterly price index for residential real estate based on transaction prices. While transaction based indices have the advantage of high data quality as observations capture actual transactions, they typically come with the downside of non-negligible time lags. Another approach, which can be seen as complement to transaction-based indices, is the use of information that is available more timely or that captures market information at an earlier stage, before a transaction has actually taken place, to capture the most recent price devel-
opments. However, this typically comes at the expense of data quality. One example for such an approach is the IMX, which has been introduced in Bauer et al. (2013). In Chapter 2 of this thesis we take this approach of capturing the most recent developments one step further and conduct short term forecasts of German property price indices.

While predicting economic variables accurately is a challenging task and forecasting property prices can give good estimates for probable price development by taking advantage of historical correlations, this cannot be a substitute for the analysis of causal effects, which is required to understand the determinants of real estate prices.

One particularly interesting question that results from the different development of property prices in Germany and its neighboring countries is the question of a price discontinuity located at the border. The trade literature has investigated discontinuities in prices of traded goods. Engel and Rogers (1996) find a price discontinuity for tradable goods for the US-Canadian border.

In the housing market, taking advantage of arbitrage opportunities, which would hamper a price discontinuity, is substantially more difficult due to the immobile nature of real estate (Glaeser and Gyourko 2007). Additionally to that, cities in the European Union still form national systems rather than a union wide system of cities (Cheshire and Magrini 2009). Therefore, moving within on border region from one country to another one changes the network the city of residence is embedded in. The infrastructure that is accessible at the new location might therefore be much more different than implied by the possibly only small distance to the previous location of residence. In Chapter 3 we contribute to this literature by examining the effect of the Dutch-German border by testing for a discontinuity in house prices using properties that are located in close proximity to the border.

With soaring budget deficits around the world and the public calling for an expansion of government investment, another interesting question is the effect of public debt on prop-

1. In Chapters 3 and 4 we use individual information on properties as indicated in advertisements on the internet site of ImmobilienScout24. ImmobilienScout24 is Germany’s largest online real estate marketplace with a self-reported market share of about 50% of all real estate transactions in Germany (Georgi and Barkow 2010). At this online marketplace, potential sellers and landlords can place ads to sell or rent out their properties. Prices in this database refer to asking prices, not transaction prices. For a detailed description of the dataset, see (an de Meulen et al. 2014).
property prices. From a theoretical perspective, the effect is straightforward. An increase in public debt reduces residents’ net worth (Barro 1974). If households foresee that public debt has to be paid back at some point in the future, rational expectations imply that public debt capitalizes into property values (Eichenberger and Stadelmann 2010). However, this negative effect of public debt has often been neglected in the analysis of benefits from public investment. Chapter 4 investigates this effect of debt on property and rental prices at the example of local governments’ indebtedness.

In Chapter 5 we address the second issue in the public debate, the concern that increasing rental prices might result in gentrification. To tackle this concern, the German government elected in 2013 announced to extend rent control in Germany with the aim of restricting increases of rental prices. However, economists typically are in opposition to such policies as price controls have substantial distortive effects (Frankena 1975; Glaeser and Luttmer 2003; Munch and Svarer 2002).

However, other redistributive policies have substantial distortive effects as well such that one should compare the cost of rent control to other redistributive policies. We therefore simulate the introduction of rent control, modeled as setting a binding upper bound to rental prices by linking these to purchase prices, to the most standard redistributive policy, tax financed lump sum transfers.

Chapter 2, which is joint work with Philipp an de Meulen and Torsten Schmidt, examines the forecastability of two timely available real estate price indices for Germany that are available on a monthly frequency. These are the IMX by ImmobilienScout24, which is based on asking prices, and the EPX by EUROPACE, which is based on home loan transaction data. Using VAR and ARDL models, we conduct forecasts for the six and twelve month horizon. Each forecast is based on the history of the respective real estate price index as well as one additional variable.

We use different indicators to capture the supply side as well as the demand side of the housing market. However, we put a special focus on the forecasting abilities of the components of consumer sentiment, for two reasons. First, consumer sentiment indicators
have proven to considerably improve forecasts of private consumption (Carroll et al. 1994; Ludvigson 2004). With housing consumption being an important part of households’ consumption baskets, these indices should also increase forecast accuracy for property prices. Second, Rouwendal and Longhi (2008) have shown that consumer sentiment does seem to be correlated with house prices in the Netherlands.

We find that both types of indicators, macroeconomic variables such as building permits as well as components of consumer sentiment, can have predictive ability. With regard to components of consumer sentiment, components that capture individual households’ current consumption/savings plans seem to perform best in forecasting property prices in Germany.

Chapter 3, which is joint work with Jan Rouwendal and Jasper Dekkers, investigates the effect of the Dutch-German border on house prices differences in the two countries. Despite the geographical proximity and very similar economic policies – both countries agreed to follow the rules and standards of the European Union and are members of the EMU such that monetary policy should be similar – the development of house prices has been very different. While the Netherlands experienced two housing cycles in the years from 1975 to 2013, house prices in Germany have essentially been flat.

This raises the question whether such differences are the result of different developments in the geographical heart of the two countries or whether such differences are present in the border region as well. Remarkable price increases in the Netherlands since the 1990s are suggestive of higher house prices in the subsequent period in the Netherlands, which might have opened up the opportunity for Dutch households living in the border region to take advantage of substantially lower house prices in Germany. However, if Dutch households value living in the Netherlands, as they e.g. prefer a familiar cultural environment, we expect a discontinuity in the house price function at the border.

The paper uses two different datasets. In a first step, we use house price transactions handled by members of the Dutch Association of Real Estate Brokers (NVM) to test for house price developments in the Dutch border region. We find that house prices indeed are decreasing with increasing proximity to Germany. Additionally to that, we show that
price increases since the early 1990s have been less pronounced in the border region in comparison to the one in the heart of the country.

In a second step, we combine two asking price datasets to test for a discontinuity in the house price function. For the Netherlands we use asking prices handled by the NVM, for Germany we use asking prices from ImmobilienScout24. We employ three different methods. We estimate a hedonic price function controlling for the border, we employ a Regression Discontinuity Design and we match German houses to their closest Dutch counterpart and analyze the house price difference. In all cases, we find houses in Germany to be of higher quality. Controlling for housing quality, German asking prices are about 16% lower. Taking into account that the difference between transaction prices and asking prices in Germany might be about 10% higher than in the Netherlands, Dutch households might be willing to pay up to 26% higher house prices to live in the Netherlands.

Chapter 4 examines the causal effect of public debt on real estate prices. Evaluations of public investment projects typically express the benefits of such projects in terms of increased property prices. Potential negative effects due to an increase in public indebtedness however, have often been neglected in such studies. But to decide on the usefulness of public investments projects, it is important to take all the associated costs and benefits into account. It is therefore important to have reliable estimates for the cost of increased indebtedness.

We estimate this price effect of public indebtedness on real estate prices at the example of apartment prices in self-governed cities in North Rhine-Westphalia. To identify shocks to public debt we employ the assumption that households form their expectations based on historical behavior of local governments’ debt positions. To check for the robustness of our results we use a second measure – the change in the debt position – employing the assumption of adaptive expectations. As shocks to public debt might result from additional government spending, which is associated with an increase in the supply of public goods, we control for this by focusing on border regions and shocks to cities’ investment credit positions. The underlying assumption is that shocks to investment credit result from infrastructure spending, which affects all households in a narrowly defined border region.
similarly. The shock to the investment credit position, on the other hand, only affects households in the city paying for the investment project.

We examine the effect of debt shocks on properties’ asking as well as rental prices. For purchase prices, we find a significant negative effect of increased indebtedness. Rental prices, on the other hand, do not seem to be affected by such shocks but by the current tax burden. This seems to be coherent with the observation that tenants are more mobile than homeowners. As tenants care about total expenses for their place of residence and always have the opportunity to relocate, they do not have to worry about a city’s indebtedness and only an increase in the tax rate results in lower rental prices. Tenants’ indifference with regard to a city’s debt position, however, might result in public over-investment in cities with a large share of rental housing.

Chapter 5 is co-authored by Torsten Schmidt and analyzes welfare effects of the introduction of rent control. Our perception of the Government’s announcement in 2013 to expand rent control in Germany is that this should be understood as a form of redistributive policy. We therefor think that it is important to compare the undoubtedly distorting effects of such a policy to an alternative policy with similar redistributive effects. As benchmark, we use tax financed transfer payments.

To compare redistributive effects we employ a general equilibrium model with heterogeneous households, similar to Iacoviello and Neri (2010) and Ortega et al. (2011). Households only differ with respect to their time preference. Impatient households’ ability to accumulate debt is restricted by a borrowing constraint. In such a setup, patient households end up owning the housing stock in the economy while impatient households rent housing services from patient ones. We therefore call patient households landlords, to impatient households we refer to as tenants.

Using this model, we simulate the effect of an increase in transfer payments to tenants. In a second step, we calibrate the introduction of rent control – modeled as linking rental prices to purchase prices of newly built properties – to yield an identical increase in steady state momentary utility for tenants. This way we show that rent control as considered in Chapter 5 Pareto dominates tax-financed transfers in steady state. This shows that rent
control – even though it might have substantial distortive effects – might be less harmful than its reputation suggests which seems to be an interesting topic for further research.