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Policy changes and short-term rentals in Portugal: how do they affect housing prices?

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1. Introduction

The interplay between the thriving tourism sector and housing market dynamics underscores the need for a careful examination of urban planning and housing policies to balance economic gains from tourism with housing affordability. Policies that are effective at balancing this trade-off require the understanding of the relationships between housing prices and the variables that can measure tourism and foreign resident activity. Although some research on housing price driver in Portugal has already been done, this paper fills the gap to answer the pertinent question of what is the effect of *alojamento local* (local lodging) (AL) and foreign resident population and associated legislation on housing prices. We use panel data methods to evaluate this relationship and also look closely at the policy changes that occurred in 2014 and 2018 that affected the short-term rental market. We will also show that the relationships found are not homogeneous for the entire territory of the country.

The collapse of the US house price bubble in 2007 demonstrated how powerful and dangerous a crisis in the real estate market can be for the economy. In fact, a house is the largest asset of most households and so changes in housing wealth may affect homeowners' consumption (Englund et al., 2002; Case et al., 2005). Moreover, changes in housing wealth are likely to impact more on the economy than changes in wealth caused by stock price movements¹.

The EU has more than 220 million households out of which 82 million are overburdened by housing costs. In 2015, 11.3% of the EU population spent 40% or more of their disposable income on housing.²

For lower and middle classes it is gradually more difficult to buy a house in Portugal.³ A recent OECD demonstrate that it took, on average, 6.8 years of annual income in the mid-

¹ Susanne Bauer, 2019

² European Commission, 2018

³ European Commission, 2022

1980s to buy a house, while now the numbers increased to a value superior to 10 years (Andrews, 2010).

House prices have been growing faster than the income in the majority of EU Member States⁴ and in Portugal, they have been increasing in the recent past, following a relatively inexpressive evolution during the 1990s and early 2000s (Rodrigues, 2017). More recently, out of 16 countries, Portugal was one of 4, that increased the price of the houses in more than 30% between 2015 and 2018, according to the 2019 Property Index of Deloitte⁵. As an example, between the first quarter of 2016 and the last quarter of 2019, the median real estate price per square meter in Lisbon increased from 1886 to 3245 euros, i.e., more than 70% (Santos, 2022).

Several drivers have been recognised for the incremental house prices. In the long term, house prices are positively influenced by disposable income, wealth, and demographic needs, while they are negatively impacted by user costs and the housing stock. Structural factors that can affect house price dynamics through their influence on housing demand and supply include tax policies, rental market regulations, and factors affecting housing supply such as land and building regulations (Geng, 2018).

Considering the structural factors influencing house prices, such as policies and regulations, the booming tourism industry in Portugal introduces a unique dynamic. The growth of tourism, especially in major cities, has significantly increased demand for housing, in both long-term residents and short-term accommodations. This surge in demand, driven by the influx of millions of tourists, further intensifies the pressure on housing prices and availability.⁶

The Portuguese economy is highly relying on tourism. Understanding the role that tourism-related activities have in shaping the urban landscape is particularly relevant in Portugal which has experienced a dramatic increase in the inflow of tourists over the last

⁴ European Commission, 2022

⁵ Deloitte, 2019

⁶ Portugal homes, 2023

decade (Nobre, 2024). In 2019, Portugal welcomed over 16 million foreign tourists, a sharp rise from 9 million in 2013. Lisbon, named the World's Leading City Break Destination by the World Travel Awards in 2017, 2018, and 2019, recorded nearly 12 million overnight stays in 2019, surpassing its resident population by more than 20 times (Santos, 2022).

Nowadays, tourism represents one of the most important sources of revenues for the country and last year, it accounted for 19,1% of the entire Portuguese Gross Domestic Product (GDP) and made Portugal, the 5th country in the world where those revenues contribute the most for the increase of GDP value ⁷.

After the COVID-19 pandemic, the influx of "digital nomads" has significantly boosted foreign direct investment in Portugal's housing market. The country is strategically positioning itself as a premium destination for both tourism and real estate. Enhanced by incentives such as the low effective tax burden, the regime for non-habitual residents, the free remittance of funds, the friendly residence permit regime (allowing for free movement within the Schengen zone) and the possibility to apply for Portuguese nationality and, consequently, obtain an EU passport, make Portugal a very attractive location ⁸.

The foreign population living in Portugal increased in 2022 for the seventh consecutive year. According to *Pordata*, the data from INE demonstrates that 798,480 foreign citizens were residing in the country at the end of last year, a 12.4% increase from 2021 (Gomes, 2023).

In 2023, Portugal registered the highest direct foreign investment in the housing market in the last 15 years. More than half of the 6800M euros of direct foreign investment in the country were in the real estate sector, an increase of 22% when compared to the previous year⁹.

The surge in direct foreign investment in Portugal's housing market has had significant ripple effects on local housing dynamics, particularly in urban areas. As foreign capital

⁷ World Travel & Tourism Council, 2019

⁸ PWC, 2021

⁹ Público, 2024

flooded the real estate sector, the attractiveness of investments in properties for short-term rental purposes grew correspondingly. These developments have catalysed legislative policies aimed at control the impact on the long-term rental market and addressing the concerns of the local population.

The initial legislation, enacted in 2014, mandated that owners of short-term rentals register their properties. This registration process was free of charge, and the license could be retained at no cost until the property was sold. As a result, holding a license became an additional way to generate income from the property.

It is important to understand the effects of this measure on house prices. Firstly, the development and revamping of buildings to turn into short-term accommodation services can increase the overall attractiveness of the neighbourhood and area where they are located, affecting the value of the surrounding properties, and potentially being the catalyst of gentrification-like processes. In addition, as discussed by Garcia-López et al. (2020), this trend may prompt homeowners to switch from long-term to short-term rentals, resulting in a decrease in the supply of residential properties available for traditional long-term leasing and affecting short and long-term real estate markets worldwide (Duso et al., 2024). It is true that it can be an advantageous for empty apartments during holiday periods that, if this was not the case, would have resulted in losses and now can be reduced by means of short-term rentals. However, if home-sharing platforms are used by owners to permanently shift from long-term to short-term rentals for tourists, the supply of units in the long-term market will be reduced, increasing housing prices and rents (Garcia-López et al., 2020).

However, the recent increase in foreign population in Portugal, the number of short-term rentals and housing prices, mainly in the city of Lisbon led the Portuguese parliament to pass a law allowing municipalities to implement zoning regulations affecting the supply of short-term rentals in August 2018. The municipality of Lisbon then implemented a ban of new licences for short-term rental housing units, in November 2018.

There is already some literature regarding this subject. Gonçalves et al. (2022) has analyzed the impact of the placing restrictions on short-term rentals while Franco et al., (2021) examine the impact on house prices of the increased number of Airbnb listings in Lisbon. Internationally, it is possible to find Garcia-López et al. (2020) and Horn et al. (2017)

who studied the impact of Airbnb in the city of Barcelona and Boston, respectively. According to these authors, who reached similar conclusions, the increased number of Airbnb's results in an increase in the houses prices around those areas.

The remainder of the paper is organized as follows. Section 2 presents the institutional context behind the policy change, section 3 describes the data and data sources, followed by section 4 where we outline the empirical strategy. Then, we discuss the results in section 5, and we conclude the paper in section 6.

2. Institutional context

Since the 1990s, Portugal has invested resources in the urban revitalization of Portuguese cities with the aim of increasing tourism and real estate investment (Nobre, 2024). The huge increased in Tourism that we have noticing in the last years is, in part, the result of various reforms implemented across time, providing a case to study.

In 2012, the first reform was implemented as an attempt to boost the lease market and ensure the supply of lease agreements at affordable prices. This reform, demanded by the European Union (EU) and the International Monetary Fund (IMF) as a condition for Portugal's bailout, liberalized old rental contracts, introduced measures to broaden the renegotiation of rent-contracts and was aimed at removing market distortions caused by various rent laws dating back to 1990, which controlled rents at levels below market rates and protected by open-ended leases that could not be easily terminated by landlords (Nobre, 2024).

This reform made it easier for landlords to end tenancy agreements and removing the minimum length requirement of five years for rental contracts (Cocola-Gant et al., 2021) (Mendes, 2022). The introduction of more flexible tenancy agreements made real estate investment in Portugal particularly attractive, causing a significant growth in demand for short and long-term rental properties.

In the same year, the "golden visa" programme introduced by the Portuguese government, resulted in a further development in the real estate market. This programme offered freedom of movement within the Schengen Area and potential Portuguese citizenship to non-EU

applicants who either purchased properties valued at a minimum of 500,000€ or invested 350,000€ into real estate rehabilitation in Portugal, thereby encouraging investors from outside the EU to acquire Portuguese properties (Teresa Barata-Salgueiro, 2017) (SEF, 2022).

In August 2014, Portugal enacted changes to its housing laws through Decree-Law no. 128/2014, introducing the concept of temporary accommodation establishments. These establishments, known as “*alojamento local*” in Portuguese, are legally recognized entities that provide short-term lodging services to tourists. This includes facilities such as apartments, villas, and guest houses¹⁰.

A central feature of the 2014 reform was the compulsory registration of local lodging establishments with the appropriate Municipal Council. This reform also introduced a formal taxation structure designed to incorporate local lodging activities into the Portuguese national tax system, thus addressing potential tax evasion issues.

Furthermore, the reform implemented a fully digital and streamlined process that allowed landlords to register their local accommodations online free of charge. This new system required establishments to clearly identify themselves as local lodging and comply with specific advertising guidelines, making the registration process simpler while ensuring these properties were easily identifiable. Existing establishments active in the temporary accommodation sector before 2014 had to register their properties in accordance with this new system within 30 days after the law was approved. Overall, the reform sought to effectively regulate the Portuguese local lodging sector, ensuring its compliance with standards and integration into the national taxation system (Portuguese Republic, 2014).

The introduction of the 2014 reform resulted in an exponential increase in the number of local lodging establishments from 1.715 in 2013 to 3.386 in 2014¹¹. The rise in local lodging options played a significant role in the surge of tourism in Portugal during this time.

¹⁰ Turismo de Portugal, 2014

¹¹ Alojamento local em Portugal - qual o fenómeno (Estudo da Universidade Nova de Lisboa e da Nova SBE), 2016

However, all these new policies also posed challenges for municipal councils, as it led to a reduction in the supply and overall availability of housing for locals¹². The simplified regulation, along with the growing number of tourists, triggered a spectacular increase in the number of short-term rental properties. In 2013 there were a total of twelve thousand properties allocated to short-term rentals in Portugal. This number grew eight times in seven years, i.e., in July 2020 there were more than 94 thousand properties (Santos, 2022). Consequently, certain municipalities, imposed restrictions to contain the growth of lodging establishments and reduce the displacement of local residents, especially in touristic areas. Most notably, the municipality of Lisbon introduced a ban on short-term rentals in 2018 as mentioned in Gonçalves (2022).

Understanding well the causes of this evolution in the real estate market, in particular the effect on prices of new legislation regarding local lodging establishments presents an important topic of research. For our main analysis, the focus is placed on the period surrounding the 2014 reform, as well as the period surrounding the 2018 legislation, as these were the most important changes that significantly exposed the presence of local lodging establishments in the Portuguese market.

3. Data

In order to be able to make any statement about the relationship of housing prices to any other variable, it is important to first define how these should be measured. For the purpose of the analysis conducted in this study, it is a requirement that the data should be available at least at a district level so that some aggregation at a NUTS II level can be done to ensure statistical power purposes as well as the possibility to exploit not only time but also regional variation. This rules out aggregate country-wide indexes. To avoid issues of obvious sample bias, private datasets (whether they are related to all transactions or only transactions on the specific platforms) were not considered.

¹² Idealista, 2023

Due to the reasoning presented, we opted for using municipality-level data from 2012 to 2021 which is a choice that contains enough regional variation and encompasses the two policies changes. From the total number of 308 municipalities, we used data from the only 125 with available data. Figure 1 shows the division of the country by municipality and in solid the municipalities that ensured a balanced panel.

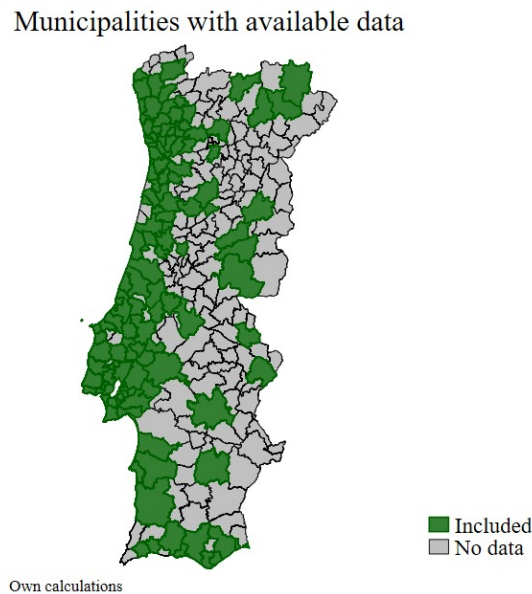


Figure 1: Division of the country by municipalities with available data

Our choice of housing price measure was INE's median bank evaluation per m² by NUTS II, since it simultaneously circumvents the regional availability of data and to the greatest extent possible the issue of sample biases arising from using data exclusively from any specific real estate platform.

The number of short-term rentals registered in Portugal was collected from *Registo Nacional dos Estabelecimentos de Alojamento Local*. From INE (Instituto Português de Estatística), we collect the number of foreign guests staying in Portuguese establishments, the evolution of the resident population of the country (total and foreign population), the average income per person, the number of total dwellings, licenses and completed dwellings, and also the house prices. These variables work as control variables. The data sources are specified in table A1 in the appendix.

3.1. Price evolution

The evolution of house prices in Portugal between 2012 and 2021 reveals the presence of some trends and fluctuations within the housing market. The evolution of the prices over the years in Portugal illustrates a U-shaped trajectory, where prices dipped to their lowest around 2013-2014 before experiencing a sharp, sustained increase to 2021. Figure 2 represents a price index with base year 2014, which indicates a remarkable growth of approximately 60% from the base year by 2021.

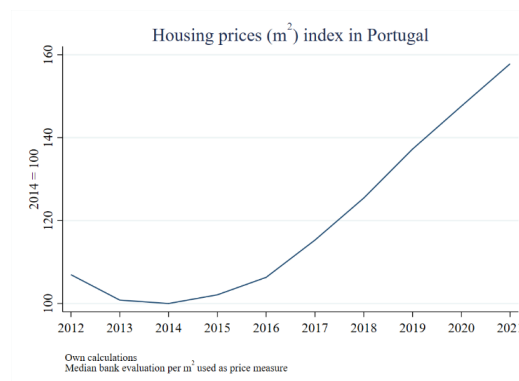


Figure 2

3.2. AL evolution

The analysis of the cumulative registrations of short-term rentals in Portugal from 2012 to 2021 reveals a significant transformation within the urban housing sector. Initially, the market experienced minimal growth, accelerating progressively until 2018. However, subsequent years saw a dramatic increase, as depicted in figure 3. The indexed data vividly illustrates this growth, showing an exponential increase from the base year of 2014, confirming the sector's expansion by over 700% by 2021.

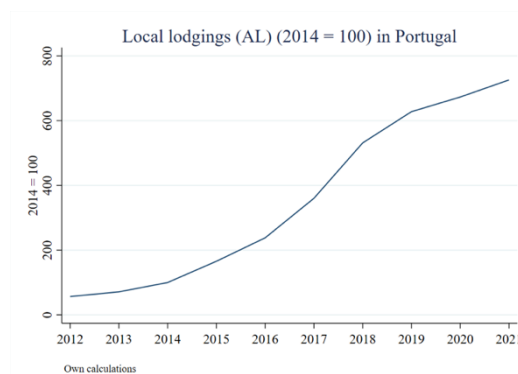


Figure 3

3.3. Foreign population

The demographic analysis of Portugal from 2012 to 2021 reveals an increase in the foreign population, particularly evident from 2016 onwards. The data show a significant rise from stable initial figures, with the absolute numbers and the indexed growth demonstrating an upward trajectory. By 2021, the foreign population had grown substantially, with the index indicating an increase of over 80% from its 2014 levels, as it is showed in figure 4.

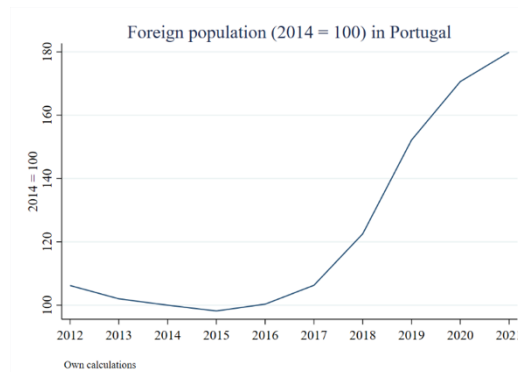


Figure 4

4. Empirical Strategy

Our empirical approach is based on the exploitation of time and spatial variation of housing prices, AL and foreign population through fixed effects estimation and an event study. The ideal setting would be an experiment or a natural experiment but since for Portugal there are no unexplored opportunities to implement this strategy, fixed effects estimation is suitable.

The base specification is the following:

$$lp_{m,t} = \alpha + \beta_1 lAL_{m,t} + \beta_2 lfpop_{m,t} + \beta_3 llic_{m,t} + \beta_4 lcons_{m,t} + \beta_5 lalobj_{m,t} + \beta_6 ltpop_{m,t} + \beta_7 lfguests_{m,t} + \beta_8 lw_{m,t} + c_m + \delta_t + \epsilon_{m,t} \quad (1)$$

Equation (1) is the baseline specification which means to evaluate the average relationship of the variables AL and foreign population with housing prices. The term $lp_{m,t}$ represents the logarithm of the prices, our dependent variable. The terms lAL , $lfpop$, $llic$, $lcons$, $lalobj$, $ltpop$, $lfguests$, lw refer to the logs of total AL registries, foreign resident

population, total licenses issued for dwellings, total finished dwelling constructions, total existing dwellings, population in Portugal, number of foreign guests, and average income per person, respectively. The term c_m represents municipality fixed effects to account for all time invariant characteristics of municipalities, e.g., location and distance to coastline. The term δ_t accounts for year fixed effects, such as economic activity, reference interest rates, etc., and finally the term ϵ_{mt} is an idiosyncratic shock. In order to disentangle some potential heterogeneity, the same regression specification was conducted for all NUTS II. The goal was to understand at how the average effect of the variables in (1) decomposes by NUTS II.

Somewhat in the light of attempting to exploit exogenous policy induced variation, an event study is employed. The rationale is to compare the residual price change after netting it from all control variables and policy implementation lags and leads. The regression specification used was the following:

$$lp_{m,t} = \alpha + \beta_1 lAL_{m,t} + \beta_2 lfpop_{m,t} + \beta_3 llic_{m,t} + \beta_4 lcons_{m,t} + \beta_5 lalobj_{m,t} + \beta_6 ltpop_{m,t} + \beta_7 lfguests_{m,t} + \beta_8 lw_{m,t} + \theta_1 policy_{t-2} + \theta_2 policy_{t-1} + \theta_3 policy_{t+1} + \theta_4 policy_{t+2} + \theta_5 policy_{t+3} + \theta_6 policy_{t+4} + \theta_7 policy_{t+5} + \theta_8 policy_{t+6} + c_m + \delta_t + \epsilon_{m,t} \quad (2)$$

The terms are the same as in (1) added with all lags and leads of the policy implementation date (2014). These will inform about the residual level of prices relative to 2014 after controlling for the remaining variables. (2) also contains municipality and year fixed effects.

5. Results

Most results do not come as a surprise, with the coefficient signs and significances following the standard results. Some cases should be highlighted, for instance, the positive coefficients of AL and foreign population which suggest a positive impact on housing prices. As we can see in table 1, the coefficient for AL indicates that for each 1% increase in AL, housing prices increases, on average, by 0.016 %. The value found is aligned with the findings in the literature. For instance, Nobre (2024) indicates that a one-unit increment in the number of local lodging establishments results in a 0.142%-0.272% increase in the value of transactions. On the same basis, Garcia-López et al. (2020) suggests that for the average neighborhood in terms of Airbnb activity, their results imply that transaction (posted) prices

have increased by 5.3%. Our results indicate a significantly lower role of AL in housing prices, but most likely this difference arises from the fact the other authors use transaction prices and not evaluation by banks therefore, they are likely to be a lower bound. Regarding foreign population, a 1% increase in this variable is associated with a 0.051 % increase in prices.

Nonetheless, the magnitude of the coefficients is not comparable to more structural factors such as total resident population and total existing dwellings that come as the major determinants of housing prices with coefficients of *circa* 1.6% and 1.5% (negative) per % change in the respective variables. Regarding the interpretation of this findings, one may argue that they should not be considered causal, and this discussion is avoided because the key message is the existence of a statistically significant correlation.

Table 1

	(1)
AL	0.016 ^{***} (0.004)
Foreign population	0.051 ^{***} (0.016)
Licenses	0.019 ^{***} (0.004)
Completed Dwellings	0.024 ^{***} (0.004)
Total dwellings	-1.578 ^{***} (0.565)
Population	1.482 ^{***} (0.117)
Foreign guests	-0.011 ^{**} (0.005)
Wage	0.014 ^{**} (0.007)
Observations	1091
Municipality Fixed Effects	Yes
Year Fixed Effects	Yes

Standard errors clustered by municipality in parentheses.

Source: Own Calculations

To understand how these relationships decompose by NUTS II, the same regression equation (1) was estimated for each of those regions, which can be observed in table 2. We found that there is no apparent relationship between the regional average share of foreign population and the impacts of both AL and foreign population in housing price. Regarding AL, it is only significant in Algarve which means that it should be that region that is determining the relationship observed at a country-level. We observed an outlier, total dwelling for the region of Alentejo with a positive coefficient of 11,421, some further research is needed because it most likely comes from the disparity between inner and coast Alentejo which present significantly different levels of tourism activity and housing prices.

Table A2 and table A3 show the results for equation (1), for all municipalities and for the breakdown by NUTS II respectively except the housing prices were netted of the housing characteristics of the municipality, namely, the number of T2's, T3's, T4's (and larger), average area of rooms, average utility area and the average number of rooms.

For the NUTSII with the least (North) and most (Algarve) average share of foreign population, we observed that the effect of AL is higher for Algarve than the average and is not present for Norte. The effect of foreign population in Algarve is significantly higher than the average and Norte.

Structural factors such as wage, population seem to be irrelevant for Algarve (except total dwellings).

Table 2

	(1)	(2)	(3)	(4)	(5)
	Alentejo	Algarve	Centro	Norte	AML
AL	-0.014 (0.017)	0.035* (0.018)	0.004 (0.006)	-0.003 (0.006)	0.008 (0.009)
Foreign population	0.074 (0.055)	0.297*** (0.076)	-0.034 (0.027)	0.058** (0.027)	0.278*** (0.051)
Licenses	0.006 (0.014)	-0.016** (0.007)	-0.007 (0.008)	0.029*** (0.006)	0.006 (0.008)
Completed Dwellings	-0.009 (0.012)	0.009 (0.006)	0.023*** (0.007)	0.031*** (0.007)	-0.009 (0.007)
Total dwellings	11.421*** (2.079)	-4.006*** (0.888)	0.697 (1.149)	-3.720*** (0.928)	-5.944*** (1.529)
Population	0.294 (0.366)	-0.195 (0.407)	1.229*** (0.224)	1.814*** (0.269)	0.160 (0.537)
Foreign guests	0.041** (0.018)	0.009 (0.023)	-0.003 (0.008)	-0.003 (0.007)	0.005 (0.010)
Wage	0.020 (0.014)	0.022 (0.026)	0.026* (0.015)	0.021 (0.014)	-0.003 (0.009)
Observations	138	90	357	365	141
Municipality Fixed Effects	Yes	Yes	Yes	Yes	Yes

Year	Fixed	Yes	Yes	Yes	Yes	Yes
Effects						
Average foreign population share (2012-2021)		4.82%	16.50%	2.95%	1.41%	6.90%

Standard errors clustered by municipality in parentheses. Source: Own Calculation

5.1. Event study

Results suggest that netting the price effect arising from the control variables, 2014 was a year for which prices started to accelerate. In the years of 2011 and 2012, the price difference to the base was not statistically significant, meaning there was no evidence to say that prices different for those years while accounting for the controls specified in Equation REF. This shows that the measure introduction in 2014 coincided with the period of price acceleration. It is also possible to observe a decline in the increase of the prices after 2018 which also align with the implementation of the policy of 2018, as is showed in Figure 4.

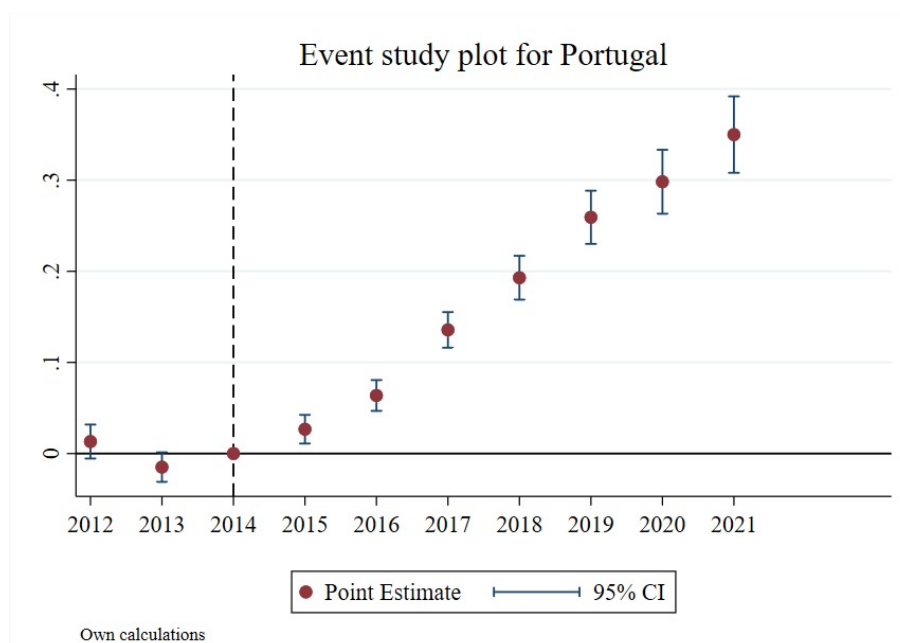


Figure 4

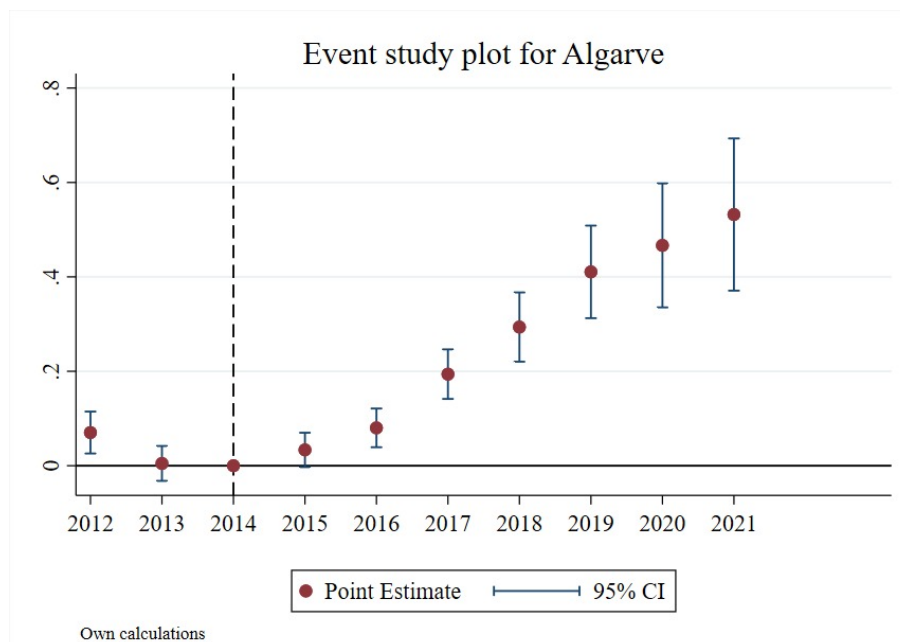


Figure 5

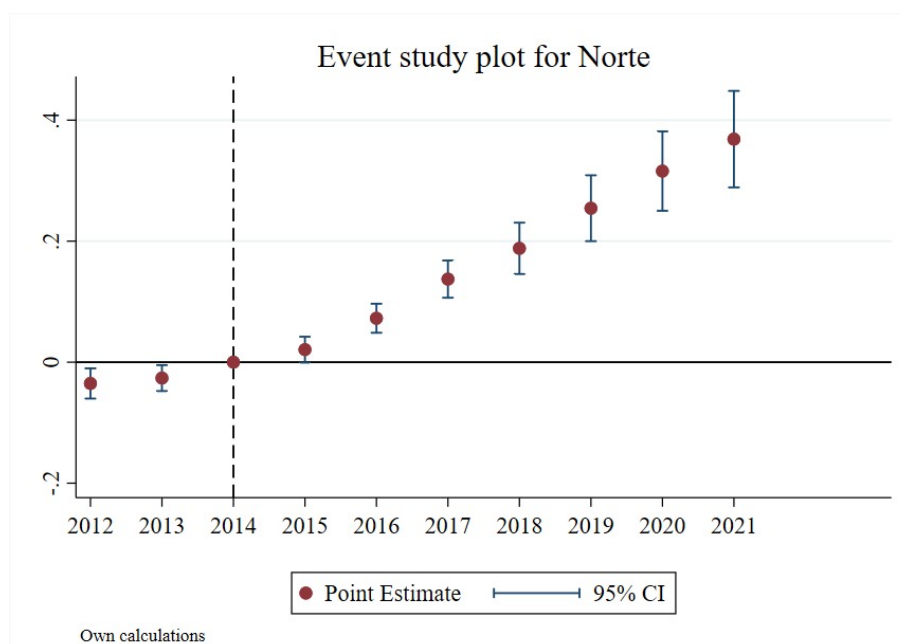


Figure 6

To understand how any difference in the prevalence of foreign population interacted with the policy changes in 2014, we look at the event study specification for the NUTSII with the least (North) and most (Algarve) average share of foreign population. Figures 5 and 6 imply

that the period of price acceleration that began in 2014 and ceased in 2018 was greater for Algarve, potentially hinting at an exacerbation of policy effects when there is a higher share of foreign population. The coefficients inform about how each year compares to the implementation of the policy in 2014.

6. Conclusion

The analysis of the Portuguese housing market over the past decade shows complex dynamics influenced by various economic, regulatory, and demographic factors. The period from 2012 to 2021 saw significant fluctuations in house prices, with a critical surge post-2014, which can be attributed to several important developments in the market.

Firstly, the introduction of legislative reforms, particularly the Decree-Law no. 128/2014, played a fundamental role in transforming the housing landscape. By formalizing the registration of short-term rentals, the law not only boosted the supply of tourist accommodations but also inadvertently exercised pressure on the housing market. The data indicates that the number of short-term rental registrations grew exponentially, reflecting broader trends in tourism and regulatory changes that encouraged this growth. This expansion had a dual effect: while it encouraged economic activity and property development, it also contributed to the scarcity of long-term rental properties, thereby driving up housing prices.

Secondly, the inflow of foreign investment and population has been another significant factor. Portugal's attractive policies for foreign investors, such as the Golden Visa program and favorable tax regimes, have made it a prime destination for international capital. The increase in foreign population, particularly post-2016, highlights the country's growing appeal. This demographic shift has had profound implications for the housing market, with foreign residents contributing to the demand for both short-term and long-term housing solutions.

The empirical results accentuate the positive correlation between short-term rentals, foreign population, and housing prices. Specifically, we found that a 1% increase in short-term rentals correlates with a 0.016% increase in housing prices, while a 1% rise in the

foreign population is associated with a 0.051% increase in prices. These findings align with the existing literature, reinforcing the notion that tourism and foreign investments are significant drivers of real estate market trends.

Moreover, the analysis at the regional level reveals heterogeneity in the impact of these factors. For instance, the Algarve region, with its high share of foreign population, shows a more pronounced effect of short-term rentals on housing prices compared to the Norte region, where such effects are negligible. We concluded that the effect on prices of an increase in the number of short-term rentals is more pronounced where there is a higher share of foreign population. This regional variation suggests that local economic conditions, population density, and tourism intensity are crucial in understanding the broader impacts on housing markets.

Our work highlights the complex interplay between regulatory measures, foreign investments, and demographic changes in shaping the Portuguese housing market. While short-term rentals and foreign population influxes have contributed to rising housing prices, they are not the sole determinants. Structural factors such as total housing stock and resident population remain the major determinants of housing prices. For policymakers, the findings suggest that measures aimed at controlling housing prices should focus on increasing housing supply rather than merely restricting tourism activities. The continued attractiveness of Portugal as a destination for both tourists and foreign investors requires balanced policies that promote sustainable urban development while ensuring housing.

7. References

- Andrews, D. (2010). Real House Prices in OECD Countries. doi:<https://doi.org/10.1787/5km33bqzhhbzr-en>
- Bauer, S. (2019). The European House Crisis. Retrieved from https://ec.europa.eu/futurium/en/system/files/ged/folder_action_plan_of_the_euaa_housing_partnership.pdf
- Case Karl E. & Quigley John M. & Shiller Robert J. (2005). Comparing Wealth Effects: The Stock Market versus the Housing Market. *The B.E. Journal of Macroeconomics*, vol. 5(1), pages 1-34.
- Cocola-Gant, A., & Gago, A. (2021). Airbnb, buy-to-let investment and tourism-driven displacement: A case study in Lisbon. *Environment and Planning A: Economy and Space*, 53(7), 1671-1688. doi:10.1177/0308518x19869012
- Commission, E. (2023). *European Economic Forecast*.
- Council, W. T. T. (2019). €1 in every €5 in Portugal comes from tourism. Retrieved from <https://wttc.org/news-article/1-euro-in-every-5-euro-in-portugal-comes-from-tourism>
- Deloitte. (2019). Property Index Overview of European Residential Markets. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/de/Documents/real-estate/property-index-2019-2.pdf>
- Duso, T., Michelsen, C., Schaefer, M., & Tran, K. D. (2024). Airbnb and rental markets: Evidence from Berlin. *Regional Science and Urban Economics*, 106, 104007. doi:<https://doi.org/10.1016/j.regsciurbeco.2024.104007>

- Englund, P., Hwang, M., & Quigley, J. M. (2002). Hedging Housing Risk*. *The Journal of Real Estate Finance and Economics*, 24(1), 167-200. doi:10.1023/A:1013942607458
- Franco, S. F., & Santos, C. D. (2021). The impact of Airbnb on residential property values and rents: Evidence from Portugal. *Regional Science and Urban Economics*, 88, 103667. doi:<https://doi.org/10.1016/j.regsciurbeco.2021.103667>
- Garcia-López, M.-À., Jofre-Monseny, J., Martínez-Mazza, R., & Segú, M. (2020). Do short-term rental platforms affect housing markets? Evidence from Airbnb in Barcelona. *Journal of Urban Economics*, 119, 103278. doi:<https://doi.org/10.1016/j.jue.2020.103278>
- Geng, N. (2018). *Fundamental Drivers of House Prices in Advanced Economies*.
- Gomes, J. A. (2023). Há quase 800 mil estrangeiros em Portugal. 30% são brasileiros. Retrieved from <https://eco.sapo.pt/2023/12/18/ha-quase-800-mil-estrangeiros-em-portugal-mais-de-29-vem-do-brasil/>
- Gonçalves, D. a. P., Susana and Pereira dos Santos, João , & (2022). Short-Term Rental Bans and Housing Prices Quasi-Experimental Evidence from Lisbon. doi:<http://dx.doi.org/10.2139/ssrn.4513823>
- Horn, K., & Merante, M. (2017). Is home sharing driving up rents? Evidence from Airbnb in Boston. *Journal of Housing Economics*, 38, 14-24. doi:<https://doi.org/10.1016/j.jhe.2017.08.002>
- Mendes, L. (2022). The Dysfunctional Rental Market in Portugal: A Policy Review. *Land*, 11(4), 566. Retrieved from <https://www.mdpi.com/2073-445X/11/4/566>

Nobre, F. a. J. G., Diogo and Cruz, Ronize (2024). Short-term Rentals and the Housing Market: Evidence From Portuguese Metropolitan Areas 51. doi: <http://dx.doi.org/10.2139/ssrn.4532561>

Parliament, E. (2019). *Economic, social and territorial situation of Portugal*.

Decree-Law no. 128/2014 29 August, (2017).

PÚBLICO, L. e. (2024). Investimento estrangeiro em imobiliário no valor mais alto em 15 anos. Retrieved from <https://www.publico.pt/2024/02/28/economia/noticia/investimento-estrangeiro-imobiliario-valor-alto-15-anos-2081964>

Pwc. (2021). Europe's best kept secret

Why Portugal should be your top tax choice? Retrieved from <https://www.pwc.pt/pt/servicos/fiscalidade/individuals-taxation/europe-best-kept-secret.html>

Rodrigues, R. F. L. P. M. M. (2017). House prices in Portugal - what happened since the crisis?. 57.

Santos, S. P. D. G. J. P. d., & (2022). Short-Term Rental Bans and Housing Prices Quasi-Experimental Evidence from Lisbon. doi: <http://dx.doi.org/10.2139/ssrn.4513823>

Teresa Barata-Salgueiro, L. M., Pedro Guimarães. (2017). Lessons from Lisbon. In Routledge (Ed.), *Tourism and Gentrification in Contemporary Metropolises* (1st ed., pp. 21).

8. Appendix

<i>Variable</i>	<i>Description</i>	<i>Frequency</i>	<i>Geographical level</i>	<i>First obs.</i>	<i>Last obs.</i>	<i>Source</i>
<i>l_bank_eval_tot</i>	median bank evaluation per m2	Annual	Municipality	2012	2021	INE
<i>lAL</i>	total AL registries	Annual	Municipality	2012	2021	<i>Registro Nacional dos Estabelecimentos de Alojamento Local</i>
<i>lfpop</i>	foreign resident population	Annual	Municipality	2012	2021	INE
<i>llic</i>	total licenses issued for dwellings	Annual	Municipality	2012	2021	INE
<i>lcons</i>	total finished dwelling constructions	Annual	Municipality	2012	2021	INE
<i>laloj</i>	total existing dwellings	Annual	Municipality	2012	2021	INE
<i>ltpop</i>	population in Portugal	Annual	Municipality	2012	2021	INE
<i>lfguests</i>	number of foreign guests	Annual	Municipality	2012	2021	INE
<i>lw</i>	average income per person	Annual	Municipality	2012	2021	INE

<i>t0_t1_con</i>	Completed dwellings (No.) in new constructions for family housing by Geographic localization (NUTS - 2013) and Dwelling typology - 0 or 1 bedroom	Annual	Municipality	2012	2021	INE
<i>t2_con</i>	Completed dwellings (No.) in new constructions for family housing by Geographic localization (NUTS - 2013) and Dwelling typology - 2 bedrooms	Annual	Municipality	2012	2021	INE
<i>t3_con</i>	Completed dwellings (No.) in new constructions for family housing by Geographic localization (NUTS - 2013) and Dwelling typology - 3 bedrooms	Annual	Municipality	2012	2021	INE

<i>t4_con</i>	Completed dwellings (No.) in new constructions for family housing by Geographic localization (NUTS - 2013) and Dwelling typology - 4 or more bedrooms	Annual	Municipality	2012	2021	INE
<i>areadivision</i>	Average utility area of completed rooms (m ²) in new constructions for family housing by Geographic localization (NUTS - 2013)	Annual	Municipality	2012	2021	INE
<i>area</i>	Average utility area (m ²) of new constructions for family housing by Geographic localization (NUTS - 2013)	Annual	Municipality	2012	2021	INE

<i>division</i>	Rooms per completed dwelling (No.) in new constructions for family housing by Geographic localization (NUTS - 2013)	Annual	Municipality	2012	2021	INE
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Table A1: Description of variables

Table A2	
	(1)
AL	0.016*** (0.004)
Foreign population	0.038** (0.016)
Licenses	0.014*** (0.004)
Completed Dwellings	0.005 (0.004)
Total dwellings	-2.233*** (0.558)
Population	1.539*** (0.116)
Foreign guests	-0.012** (0.005)
Wage	0.013** (0.006)
Observations	1091
Municipality Fixed Effects	Yes
Year Fixed Effects	Yes

Standard errors clustered by municipality in parentheses.

Source: Own Calculations

TABLE A3

	(1)	(2)	(3)	(4)	(5)
	Alentejo	Algarve	Centro	Norte	AML
AL	-0.012 (0.017)	0.048** (0.018)	0.005 (0.006)	-0.002 (0.005)	0.012 (0.010)
Foreign population	0.069 (0.055)	0.304*** (0.079)	-0.039 (0.027)	0.037 (0.026)	0.275*** (0.053)
Licenses	0.003 (0.014)	-0.012 (0.007)	-0.009 (0.008)	0.019*** (0.006)	0.013 (0.009)
Completed Dwellings	-0.015 (0.012)	-0.010 (0.006)	0.011 (0.007)	-0.001 (0.006)	-0.022*** (0.008)
Total dwellings	11.190*** (2.067)	-4.339*** (0.921)	-0.535 (1.176)	-4.041*** (0.892)	-7.674*** (1.612)
Population	0.330 (0.364)	-0.154 (0.422)	1.312*** (0.230)	2.040*** (0.258)	0.681 (0.566)
Foreign guests	0.042** (0.018)	0.002 (0.024)	-0.004 (0.008)	-0.005 (0.007)	-0.005 (0.011)
Wage	0.021 (0.014)	0.028 (0.027)	0.023 (0.015)	0.009 (0.013)	-0.007 (0.009)
Observations	138	90	357	365	141
Municipality Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors clustered by municipality in parentheses.

Source: Own Calculations

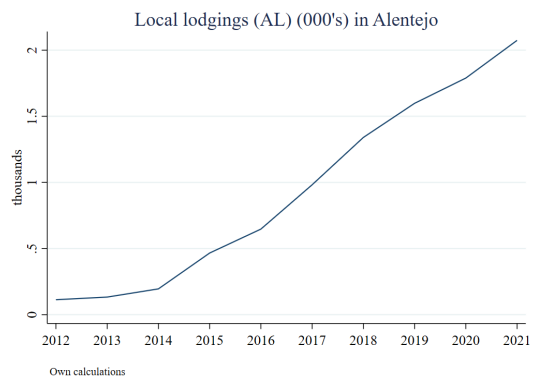


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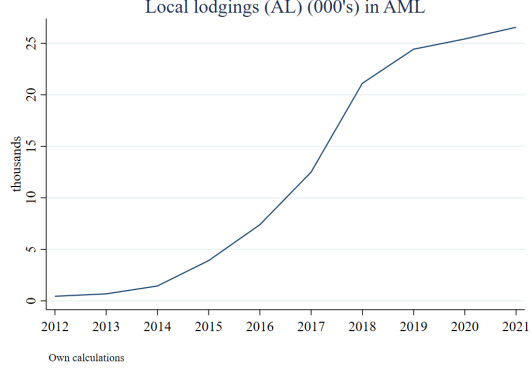


Figure A1.2

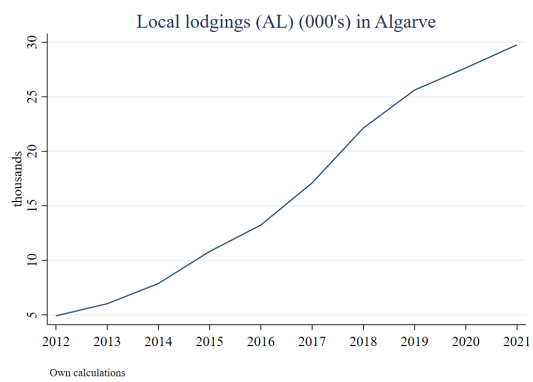


Figure A1.3

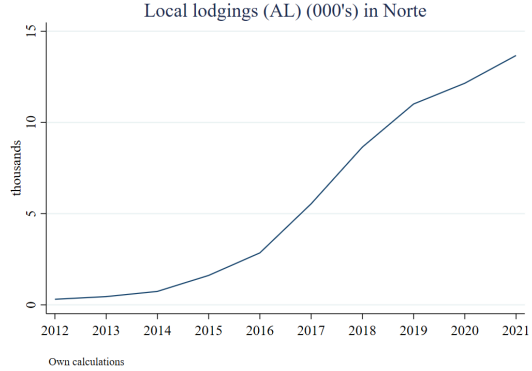


Figure A1.4

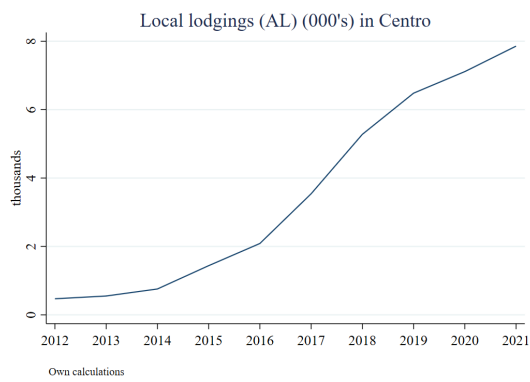


Figure A1.5

Figure A1

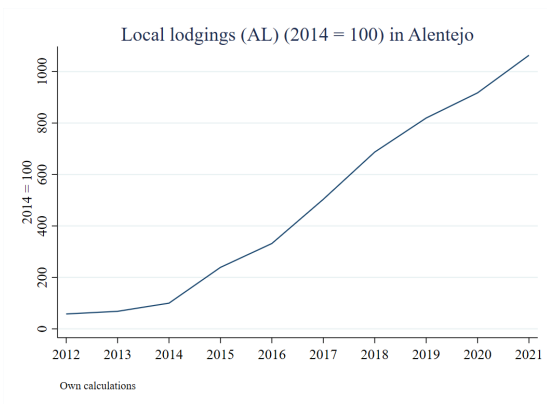


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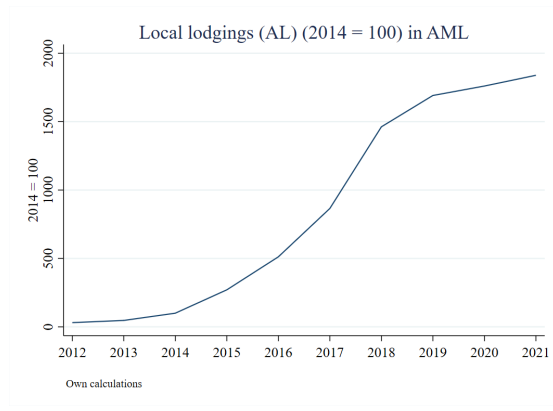


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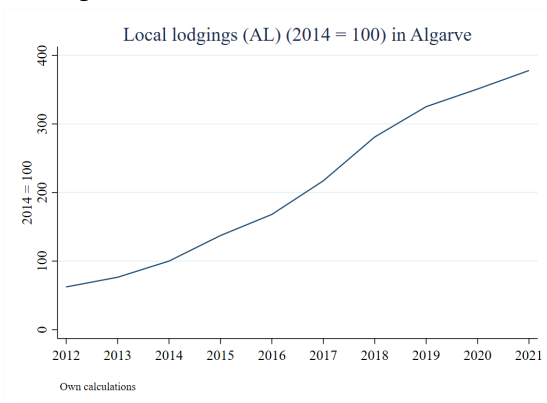


Figure A2.3

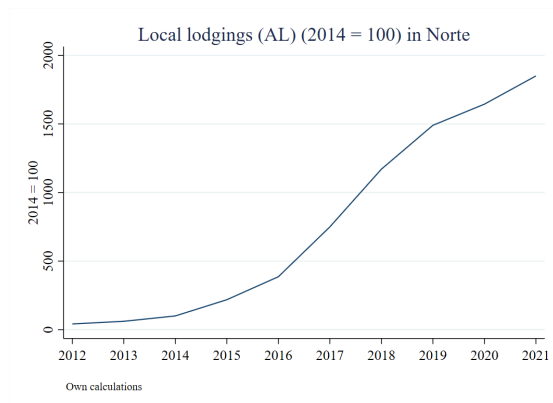


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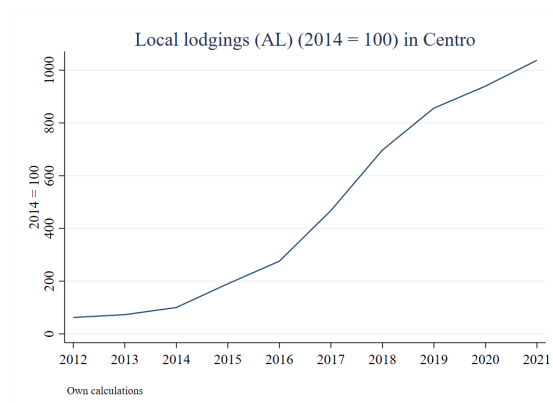


Figure A2.5

Figure A2

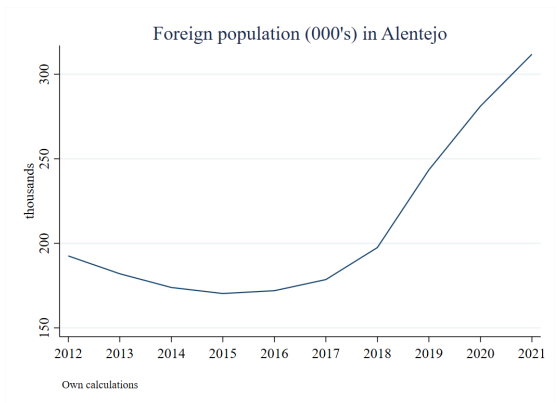


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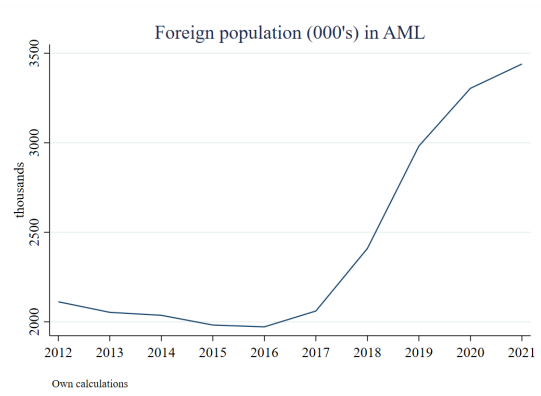


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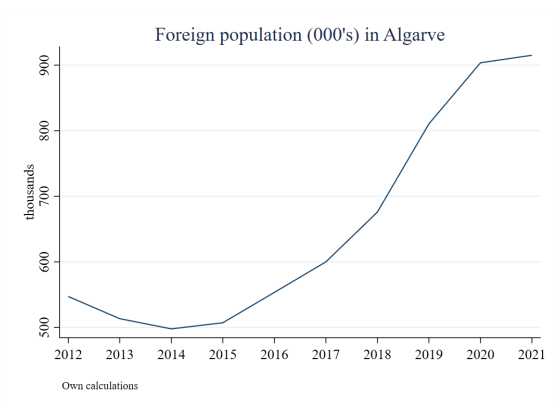


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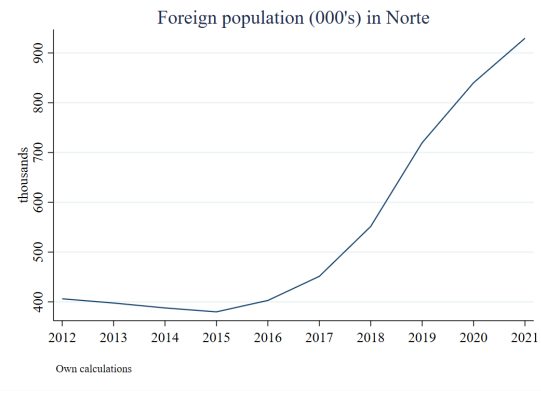


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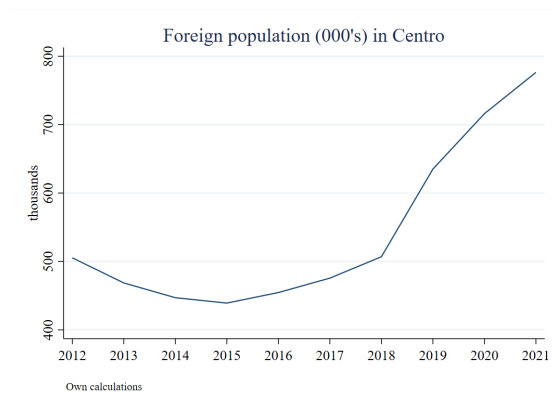


Figure A3.5

Figure A3

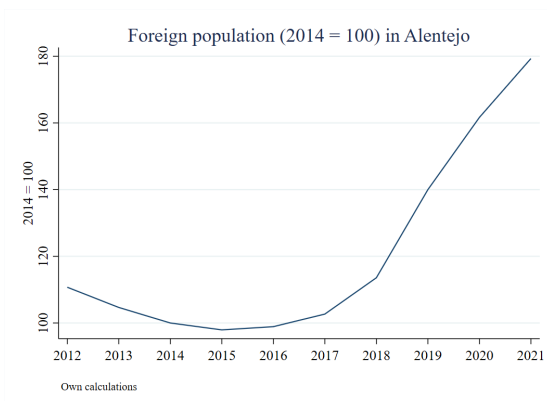


Figure A4.1

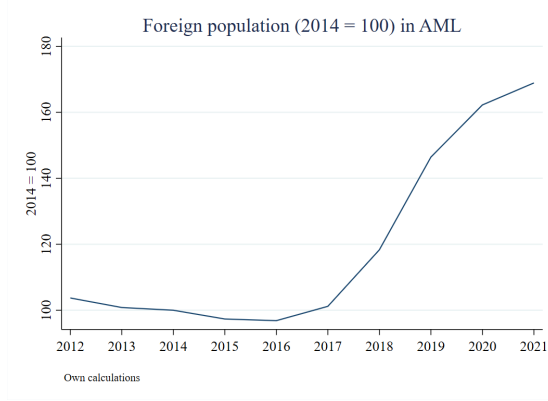


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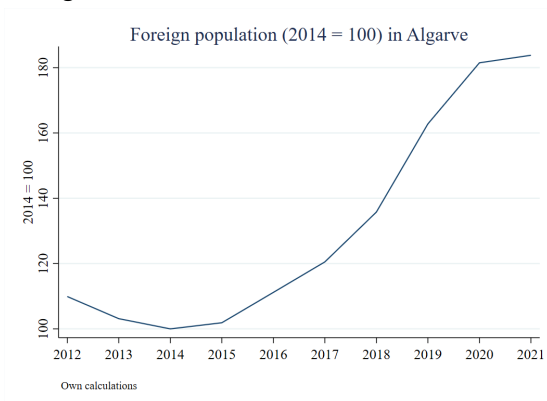


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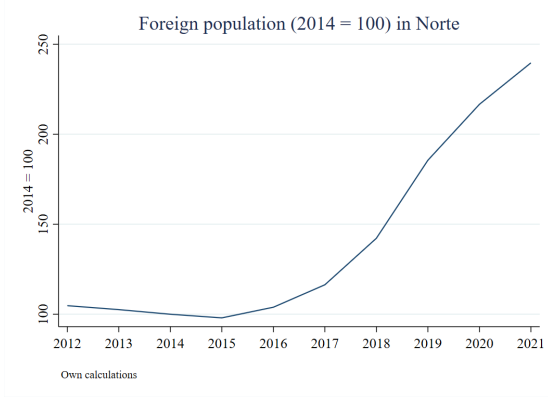


Figure A4.4

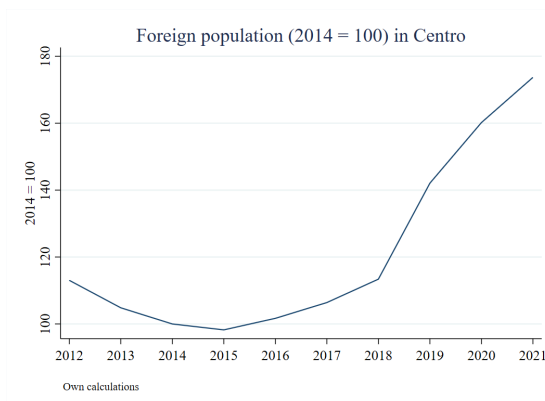


Figure A4.5

Figure A4

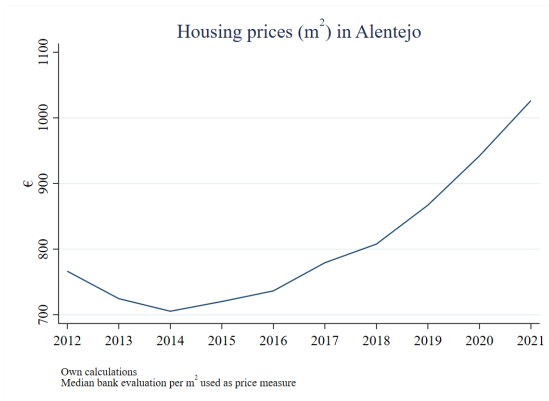


Figure A5.1



Figure A5.2

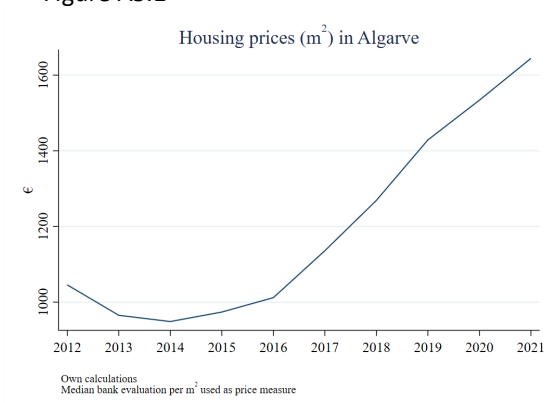


Figure A5.3

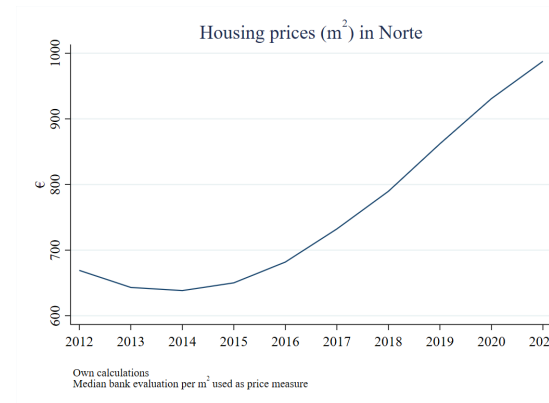


Figure A5.4



Figure A5.5

Figure A5



Figure A6.1

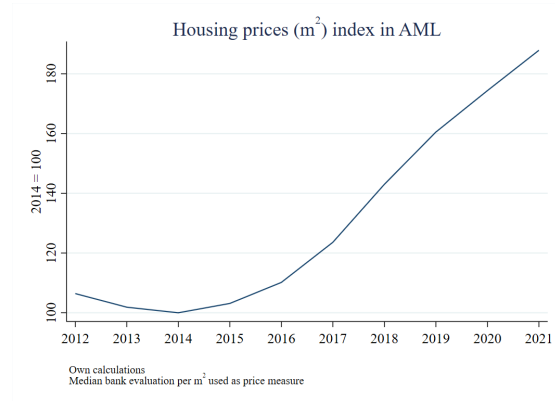


Figure A6.2



Figure A6.3

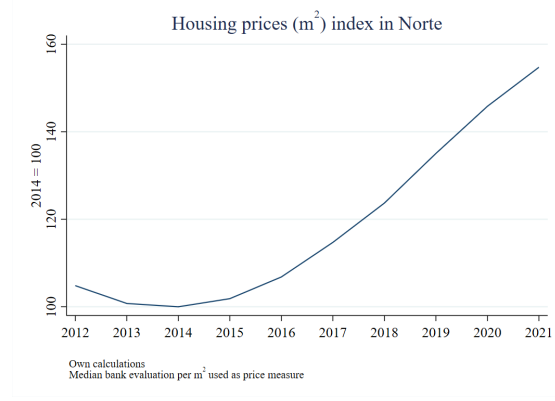


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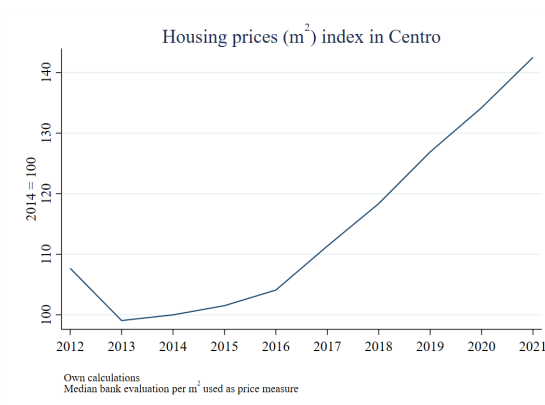


Figure A6.5

Figure A6

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