

# Golden Visas and Real Estate Markets\*

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## Abstract

This paper studies the impact of investor citizenship and residence schemes—more colloquially known as *golden visa* programmes—on local real estate markets. We do so by examining the Spanish golden visa programme that was introduced in 2013 and grants visas and full residence rights to foreign investors who invest at least 500,000 Euro in the Spanish real estate market. Using the universe of real estate transactions in Spain and difference-in differences as well as spatial techniques, we obtain three main findings. First, the number of real estate transactions above the threshold increased by 43% more for non-EU relative to EU investors after the introduction of the programme. Second, non-EU investors appear to pay a premium of 11,521 Euro around the threshold relative to EU and Spaniards, but no other premium appears to exist along other parts of the real estate price distribution. Finally, we find that the programme had spillover effects on the real estate market. The average increase in golden visa exposure increases overall real estate transaction prices on average by 0.19% after the introduction of the scheme.

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# 1 Introduction

With the onset of the global financial crisis, many countries in the world decided to introduce policies aimed at stimulating their economies and increasing investment flows. In particular, many national governments introduced investor citizenship and residence schemes, more colloquially known as “golden passport” and “golden visa” programmes, which allow individuals to buy citizenship or residence in a host country for a substantial financial contribution. The usual qualifying investments are investment in a company, in an investment fund or structure, in government bonds, in real estate, deposits in a bank, and financial contributions to the public good. Globally, more than 60 countries currently operate golden passport or visa programmes, which see hundreds of thousands of people using their purchasing power to gain a grade of membership in a polity each year. In the European Union alone, more than 130,000 people have gained citizenship or residence in this way, through programmes that are found in half of all EU member states ([Surak, 2023](#)). Despite the worldwide use of these investor citizenship and residence schemes by national governments, there is no study causally assessing their economic impact.

This paper aims to fill this gap by evaluating the introduction of the golden visa programme in 2013 in Spain. According to national government reports, most applicants park their funds in real estate. Hence, the focus of this study will be to evaluate the impact of investments in real estate through the programme on local real estate markets. Spain is an ideal laboratory for two main reasons. First, the country has one of the most generous golden visa programmes in the world, as non-EU investors can obtain a visa or authorizations with full residence rights by just investing at least 500,000 Euro in real estate. Second, it also has rich administrative micro-level data on the universe of real estate transactions from real estate property registrars before and after the introduction of the programme, including the location of the properties, the nationality of buyers and sellers, as well as financing information.

We provide three main results. First, we study whether the programme was effective, that is, whether there has been a significant increase in real estate investment by non-EU investors after its introduction. We first provide descriptive evidence documenting that non-EU investors bunch at the 500,000 Euro threshold and that the growth in real estate-transactions by non-EU investors has been 3.83% higher than the growth for EU investors after the introduction of the programme. We then estimate the effectiveness of the programme more formally using triple difference-in-differences using Poisson Pseudo Maximum Likelihood (PPML) by comparing the number of real estate transactions (i) above and below (starting at 400,000 Euro) the 500,000 Euro threshold, (ii) by non-EU relative to EU investors, and (iii) before and after the introduction of the programme. We find that the number of real estate transactions above the threshold increased by 43% more

for non-EU relative to EU and investors after the introduction of the programme. These transactions are concentrated among the top 10 largest non-EU nationalities in terms of golden visa investments and are more important in high-income and low-unemployment areas. Both coastal and non-coastal municipalities experience significantly more golden visa real estate transactions after the introduction of the scheme relative to EU transactions, but the effects are more pronounced in non-coastal areas, as the latter had almost no high-end real estate transactions purchased by non-EU investors in the pre-reform period.

Second, we estimate the "price" of a Golden Visa by assessing whether the programme increased the premium that non-EU investors are willing to pay for a qualifying property. We do so by relying on a difference-in-differences design where we compare real estate transaction prices of non-EU relative to EU and Spanish investors before and after the programme, while controlling for as many transaction characteristics as possible (i.e., property quality, property size, type of buyer, etc.) and including surface area fixed effects and zip-code times year fixed effects. We find that non-EU investors buy real estate properties around the threshold that are on average 11,421 Euro more expensive than those bought by EU and Spaniards after the introduction of the programme. These findings go in line with those found by [Cvijanović and Spaenjers \(2021\)](#), [Davids \(2020\)](#), [G. Li \(2021\)](#) and [Pereira dos Santos and Strohmaier \(2024\)](#) in other settings. In particular, [Pereira dos Santos and Strohmaier \(2024\)](#) document a golden visa premium where transaction prices exceed fiscal values by an average of around €38,000 at the investment threshold in Portugal. In line with the quantity analyses, the premium we uncover is mainly driven by top 10 largest non-EU nationalities in terms of golden visa investments. We do not find any other premium along other parts of the real estate price distribution.

Third, we study whether the golden visa programme had any spillover effects on real estate prices in Spain. For that, we exploit variation in the exposure to the programme across zip codes. Despite controlling for municipality-level characteristics and interacting the golden visa share with a post-reform dummy, the estimation may still suffer an endogeneity bias. The reason is that golden visa investors do not randomly select the zip codes in which they invest, which makes identification challenging. To overcome the potential endogeneity problem, we exploit differences in the ex-ante exposure to high-end real estate transactions by non-EU investors across zip codes, that is, we interact the average share of high-end real estate transactions (i.e., transactions above 500,000 Euro) purchased by non-EU investors in the pre-programme period (2008-2012) with time dummies. We find that the programme had spillover effects on local real estate markets increasing overall real estate transaction prices on average by 1.9% after the introduction of the scheme. This effect corresponds to an average increase in real state prices of 0.19% for an average increase in the share of high-end transactions between the pre- and the post-programme period of 0.1. We also document that the spillover effects are higher the larger the ex-ante

exposure to high-end real estate transactions by non-EU investors.

This paper contributes to the literature analyzing the determinants of real estate price fluctuations. Scholars have highlighted, among others, the importance of credit supply and credit conditions (e.g., Akin et al., 2014; Favara and Imbs, 2015, Favilukis, Ludvigson, et al., 2017, Jordà et al., 2015, Justiniano et al., 2019; Mian and Sufi, 2009, Mian and Sufi, 2022); housing supply (e.g., Glaeser et al., 2005, Gyourko et al., 2013, Saiz, 2010); house purchase restrictions (e.g., Deng et al., 2022); agglomeration effects (e.g., Combes et al., 2019); shifts in beliefs (e.g., Adelino et al., 2016, Burnside et al., 2016 Kaplan et al., 2020, Mian and Sufi, 2022); inflation and money illusion (e.g., Brunnermeier and Julliard, 2008; seasonality (e.g., Ngai and Tenreyro, 2014); and demographic changes (e.g., Mankiw and Weil, 1989).

Our paper is closely related to the substrand of this literature emphasizing the role of foreign capital flows in explaining real estate price fluctuations. Early research primarily relied on cross-country data and panel regressions to examine the effect of foreign capital inflows on housing markets (e.g., Aizenman and Jinjarak, 2009, Sá et al., 2014, Cesabianchi et al., 2015, Favilukis, Kohn, et al., 2013, Artola et al., 2021). More recent studies have used granular micro-level datasets and reduced-form techniques to study the causal link between foreign capital and house prices, as well as the underlying mechanisms. Scholars have highlighted the role of immigration and ethnic networks (e.g., Cvijanović and Spaenjers, 2021, Gonzalez and Ortega, 2013, Z. Li et al., 2024, Sá, 2015, Sanchis-Guarner, 2023); economic and political risk (e.g., Badarinza and Ramadorai, 2018, Sá, 2016); exchange rate depreciation (e.g., Davids, 2020); flight route openings (e.g., Sakong, 2021); and international tax policy (e.g., Gorback and Keys, 2020) as important drivers of foreign demand of real estate and real estate price increases.

We show that golden visa or investor by citizenship programmes can be an important force increasing foreign demand of real estate and real estate prices. Recent studies examining these programmes are mainly descriptive or qualitative in nature (e.g., Džankic, 2019, Surak and Tsuzuki, 2021, Surak, 2021, Surak, 2022; Surak, 2024, Xu et al., 2015). The only few quantitative studies evaluating the economic impact of these schemes focus on cross-country deposits (Langenmayr and Zyska, 2023) and enterprises (Lee and Glennon, 2023). As mentioned earlier, Pereira dos Santos and Strohmaier (2024) uncover a golden visa real estate premium around the minimum investment threshold in Portugal, but they do not assess the quantity nor the spillover real estate price effects of the programme. This paper is thus the first to quantify the impact of golden visa programmes on local real estate markets.

The rest of the paper is organized as follows. Section 2 describes the institutional setting of the Spanish golden visa programme. Section 3 provides details about the data sources

used in the study. Section 4 presents descriptive evidence about the scheme. Section 5 evaluates the effect of the programme on quantities, that is, on the number of real estate transactions. Section 6 examines the effect of the scheme on real estate prices across the real estate price distribution and the associated spillover effects on local real estate markets. Finally, Section 7 concludes.

## 2 Institutional Setting: The Spanish *Golden Visa* Programme

Following the outbreak of the 2008 financial crisis, Spain introduced a residency programme for foreigners with the aim of stimulating its economy. This scheme has been in force since September 28, 2013 (Law 14/2013 of September 27) and grants visas and authorizations with full residence rights—including access to the Schengen Area and other European Union countries—to foreign investors who make a significant capital investment.<sup>1</sup>. The minimum qualified investments are: 500,000 Euro in real estate; 1,000,000 Euro in shares of Spanish companies, venture capital funds established in Spain, or bank deposits in Spanish financial entities; 2,000,000 Euro in Spanish public debt securities; or any business investment with high socioeconomic impact (for example, job creation, scientific innovation, etc.). In the case of investments in real estate, at least 500,000 Euro of the value must not be mortgaged and the investment can be made in multiple properties as long as the total investment amounts to at least 500,000 Euro.

There is no requirement for the investor to reside in Spain, but he must be of legal age, have no criminal record during the last five years and have public or private health insurance from an entity authorized to operate in Spain.<sup>2</sup> The investor obtains a visa with a duration of one year if he is outside of Spanish territory, while if the investor is legally in Spain he can directly obtain a residence authorization with a validity of three years (two years until 20th December 2022, Law 28/2022). If the investor with a visa wishes to maintain residence for more than one year, he can apply for a residence permit valid for three years at any time before the visa expires (under the condition of maintaining the investment and visiting the country at least once during the period). The authorization can be renewed indefinitely for subsequent five-year periods if the investor continues to comply with the requirements. Spouses, partners, children and descendants of the investor can also obtain the visa. Investments can be made directly by individuals or through a corporation.

Since the entry into force of the program in late 2013 until the end of 2023, a total of

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<sup>1</sup>The programme also grants visas and authorizations to entrepreneurs, highly qualified professionals, researchers and workers who move within the same company or group of companies.

<sup>2</sup>We will use *he* throughout as a convention.

13,285 initial visas and/or authorizations have been granted to primary visa applicants for investments in Spain. Out of this total amount of visas and/or authorizations, 94.14% (12,507) have been granted for the acquisition of real estate, and 5.86% (778) for other investments (i.e., financial assets and businesses).<sup>3</sup> This motivates why, in the remainder of the paper, we restrict the evaluation of the programme to the acquisitions of real estate.

Figure 1a documents that in 2014 the take-up of the programme was quite low—only 153 initial golden visas were granted for investments in real estate—due likely to the fact that investors took some time to learn about the programme, invest, and apply for the visa. However, the number of golden visas steadily grew thereafter reaching 1,401 in 2019. In 2020, the number of golden visas declined to 778 due to the COVID-19 outbreak, but it further increased thereafter reaching 3,111 in 2023.

The take-up of the scheme is highly concentrated among investors coming from certain regions, as shown in Figure 1b. The two regions with the largest amount of visas and/or authorizations granted between 2014 and 2023 were Europe (4,876) and Asia (4,429). According to [Boletín Oficial de las Cortes Generales \(2020\)](#), this is mainly due to Russian and Chinese investors, which represent approximately three quarters of the total number of visas granted via the investment route. The number of visas or authorizations granted to Europeans substantially increased in 2021, due likely to the rise in golden visa applications by UK investors after Brexit.

Figure 2 shows that the take-up of programme is concentrated in only a few Spanish provinces. In particular, there are only four provinces with more than 1,000 acquisitions of real estate by golden visa investors between 2014 and 2023 (i.e., Barcelona (4,052), Málaga (2,297), Madrid (2,206), Alicante (1,313)), followed by only six provinces with more than 100 but less than 1,000 acquisitions (i.e., Balearic Islands (754), Girona (524), Valencia (467), Tenerife (339), Cádiz (140), and Tarragona (119)). The rest of provinces have less than 100 golden visa acquisitions, out of which ten of them do not have a single acquisition over the 2014-2023 period, as shown in Figure 2. These are mainly non-coastal poorer and less densely populated provinces.<sup>4</sup>

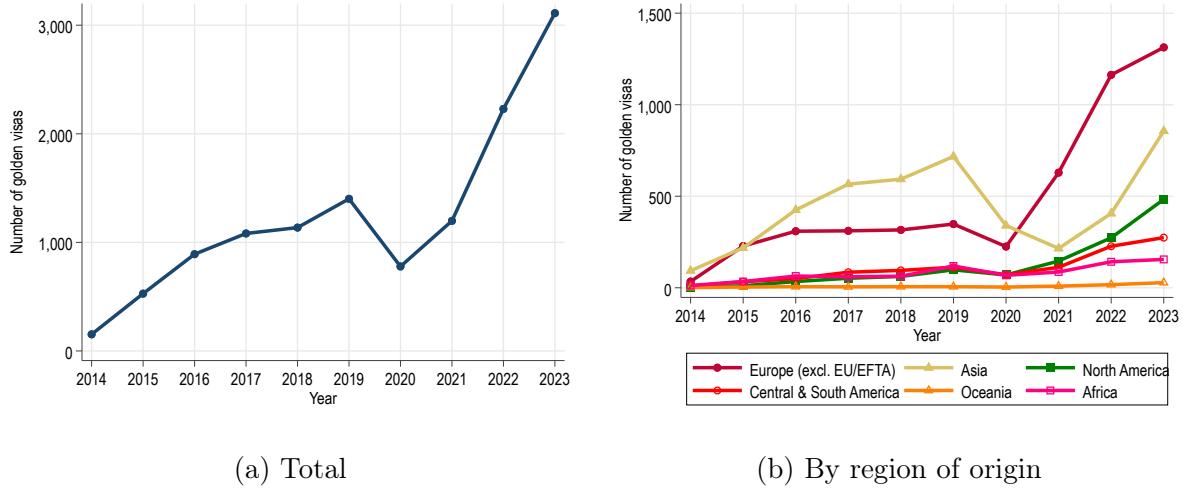
On April 8, 2024, the Spanish government announced that they were going to start the procedure to eliminate the golden visa programme as part of a broader move to address concerns over rising housing prices and the impact of foreign investment on local communities. Spain had already suspended its golden visa programme for Russian citizens in response to the Russian invasion of Ukraine, which began in February 2022. The

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<sup>3</sup>An additional 10,350 visas—9,923 for real estate, 427 for other investments—have been granted to these primary visa investors due to renewals or changes of visa type between 2014 and 2023. Furthermore, 39,693 additional visas or authorizations (including initials, renewals and modifications) have been granted to dependents of these investors between 2014 and 2023.

<sup>4</sup>Appendix Figure B1 shows that the take-up of programme is also disproportionately more concentrated among middle-aged male investors.

Figure 1: Golden visas initially granted via real estate investments, 2014-2023



(a) Total

(b) By region of origin

*Notes:* This figure presents the annual evolution of golden visas or authorizations initially granted to primary applicants via real estate investments in Spain from 2014 to 2023. Panel (a) depicts the total amount of initial visas or authorizations granted every year to primary visa applicants for investments in real estate. Panel (b) decomposes the total amount of initial visas or authorizations granted every year to primary visa applicants for investments in real estate by region of origin of the applicant. The continents included are Europe (excluding EU/EFTA and including Russia), Asia, North America, Central and South America, Oceania, and Africa. The data is sourced from [Observatorio Permanente de la Inmigración \(OPI\)](#).

Figure 2: Golden visas granted via real estate investments across Spanish provinces, 2014-2023



### 3 Data

This section outlines the datasets used in our empirical analysis. Section 3.1 describes the primary dataset on real estate transactions, which includes detailed information at the property and buyer-seller level. Section 3.2 presents the supplementary municipality-level datasets that capture local socioeconomic and housing market characteristics, which we use as controls in the analysis.

#### 3.1 Real Estate Transactions

The primary data source we use is the universe of real estate transaction records from the Spanish registrars, which provides very detailed information on all real estate purchases that have been officially registered across Spain from 2003 to 2022. Most real estate transactions are registered by the registrars, as they provide legal security to the buyer for a relatively low cost.

For each transaction, the dataset includes the transaction price, transaction date, number of squared meters, property type (i.e., urban or rural, free or public) and subtype (i.e., apartment, terraced house, detached houses, commercial properties, offices, garage, land, etc.), municipality, zip code, street, property title (i.e., sale, barter, inheritance, donation), and financing information (i.e., mortgage value, interest rate, and mortgage duration). Most importantly, the dataset contains information on both buyers and sellers, in particular, their nationality as well as whether they are an individual, a corporation or a public institution.

We limit our analysis to the period from 2008 to 2019. We exclude years 2003 to 2007, since they do not contain full information on nationality, which is the key variable we need to evaluate the programme. We also exclude the period from 2020 onward to avoid the confounding effects caused by the significant decline in real estate transactions during the COVID-19 pandemic and Brexit. In addition, we restrict our analysis to urban and free real estate properties, which include either apartments, terraced or detached houses, commercial properties and offices. We thus exclude rural, public or state subsidized properties, as well as any other type of property such as land, garages or industrial warehouses. We also focus on transactions arising from sales and carried by either individual or corporate buyers, thereby also excluding transactions taken place due to barter, inheritances or donations, as well as those properties bought by public institutions. We address outliers by trimming 1% from both the lower and upper tails of the value of the transaction and size of the property. This step ensures that the combination of value and size to calculate the price per square meter falls within reasonable ranges. Finally, we also drop transactions that miss zip code and street information. As a result, our cleaned final sample comprises 3,878,873 observations, representing approximately 13% of the

original raw registrars sample. Appendix A outlines the data cleaning procedure in more detail, documents the number of observations removed at each stage, and presents the annual number of observations we have in the final cleaned dataset we use in the analyses.

Despite its richness, the Spanish registrars database does not provide an indicator for whether the real estate transaction granted the buyer a golden visa or not. Hence, we need to find a proxy indicator for golden visa transactions with the available information included in the dataset. We create a golden visa dummy variable indicator and set it equal to 1 if the transaction satisfies the following two conditions: (1) the *cash value* (transaction value minus the mortgage) is equal or above 500,000 Euro, and (2) the transaction was made by a non-EU buyer on or after September 28, 2013; 0 otherwise. This proxy may be subject to measurement error for two main reasons. On the one hand, we may be overestimating the number of golden visas with this measure if there are non-EU buyers who are purchasing properties whose cash value is equal or above 500,000 Euro, but they do not apply for a golden visa. On the other hand, we may be underestimating this measure if there are non-EU buyers who are applying for a golden visa, but they are purchasing multiple properties below 500,000 Euro instead of just one above the threshold.

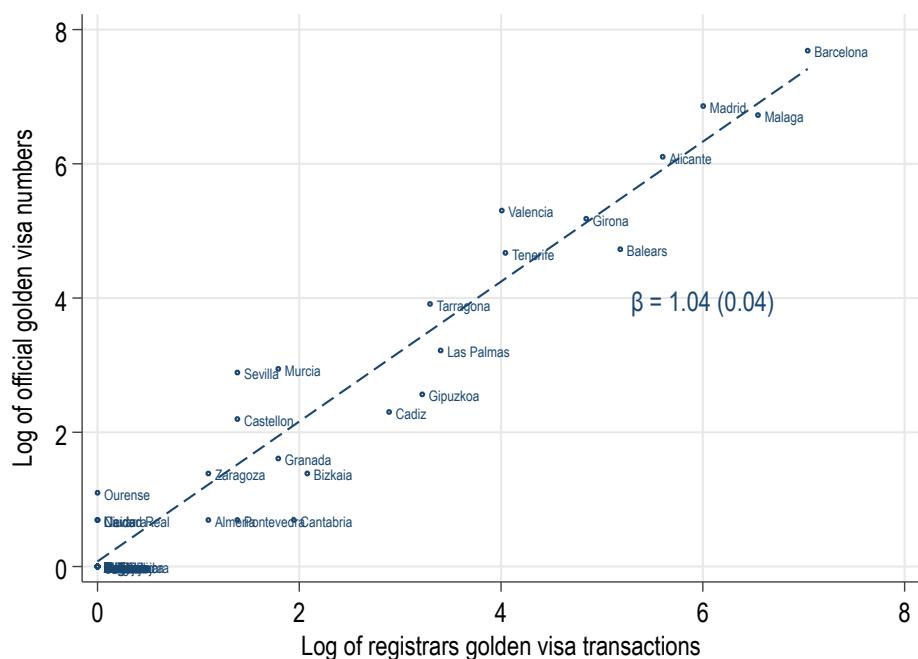
We assess the validity of our indicator at correctly identifying golden visa transactions by comparing it with the aggregate official statistics on golden visas granted for investments in real estate sourced from [Observatorio Permanente de la Inmigración \(OPI\)](#). Figure 3 reports the relationship between the total official number of initial visas and residence authorizations granted to primary visa applicants for investments in real estate and the number of golden visa transactions based on the golden visa indicator we create using the Spanish registrars database across Spanish provinces. The coefficient for regressing the official number on our registrars measure using logs is 1.04 and significant at the 1% level, suggesting that our indicator captures the overall distribution of golden visas across Spanish provinces very well.

### 3.2 Municipality-Level Control Variables

We construct a set of municipality-level control variables from various administrative and statistical sources. These include: total and foreign population size, local property tax rates, income per capita, buildable urban land ratios, public spending, employment contracts, and unemployment rates (scaled by population).

**Population and foreign population.** We obtain population data from the Padrón Continuo microdata provided by the Instituto Nacional de Estadística (INE). This dataset offers detailed information on the number of residents by nationality for each municipality from 1996 and annually from 1998 to 2022.

Figure 3: Relationship between official golden visa numbers and registrars golden visa transactions



*Notes:* This figure presents the relationship between the official number of golden visas and residence authorizations granted for real estate investments through the Spanish Golden Visa programme and the number of golden visa transactions recorded by the Spanish registrars across provinces. The comparison includes all visas initially granted to primary applicants and transactions recorded between 2014-2019. The coefficient and standard error reported are derived from regressing the official visa numbers on the registrars' transactions, both in log form. The official statistics are sourced from [Observatorio Permanente de la Inmigración \(OPI\)](#), while transaction data is obtained from the Spanish registrars.

**Property tax rates.** Municipal-level data on the Impuesto sobre Bienes Inmuebles (IBI) for urban properties are available from 2000 to 2020, covering on average 7,546 municipalities (approximately 92.8% of the Spanish population) during our sample period (2008–2019).

**Income per capita.** We use estimates of average taxable income per inhabitant provided by the Fundación de Estudios de Economía Aplicada (FEDEA), constructed using IRPF tax microdata from the Spanish Tax Agency. The data span 2004–2020 and include additional distributional indicators such as income quintiles, top 1% share, and Gini indices. Data coverage is limited to municipalities with more than 5,000 inhabitants.

**Buildable urban land.** Following Basco, Lopez-Rodriguez, and Elias (2017) and Basco, Lopez-Rodriguez, and Moral-Benito (2025), we calculate the ratio of available buildable urban land to urban land with existing structures using census data from the Spanish Cadastre spanning 1990–2020. This serves as a proxy for housing supply elasticities, capturing the potential for future construction.

**Public expenditure.** To control for local government fiscal capacity, we use data from the Secretaría General de Coordinación Autonómica y Local (SGCAL) within the Ministry of Finance. This dataset provides detailed budgetary information, including consolidated spending for each municipality and its dependent entities from 2005 to 2022. We aggregate total public spending across all chapters, focusing on actual executed expenditure. The data are harmonised across years and adjusted for reporting differences in municipalities with fewer than 5,000 inhabitants.

**Unemployment and employment contracts.** We use monthly municipal-level data from the Servicio Público de Empleo Estatal (SEPE) covering 2005–2023. These data report registered unemployment and the number of new employment contracts. To construct annual series, we average monthly unemployment figures across the year. Privacy masking (“<5” entries) affects only a small number of observations after 2022 and does not materially affect our sample.

**Geospatial data.** We use additional geographic information to enrich our municipality-level dataset:

- (1) Geolocation data for Spanish municipalities from Opendatasoft.<sup>5</sup>
- (2) Data from Eurostat is used to identify coastal municipalities in Spain. These are defined as municipalities (LAU2) that either border the coastline or have at least 50% of

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<sup>5</sup>Link to dataset is [here](#).

their surface area within 10 km of the coast.<sup>6</sup>

(3) Historical postal codes for each municipality in Spain is from the Callejero del Censo Electoral which is maintained by INE.<sup>7</sup>

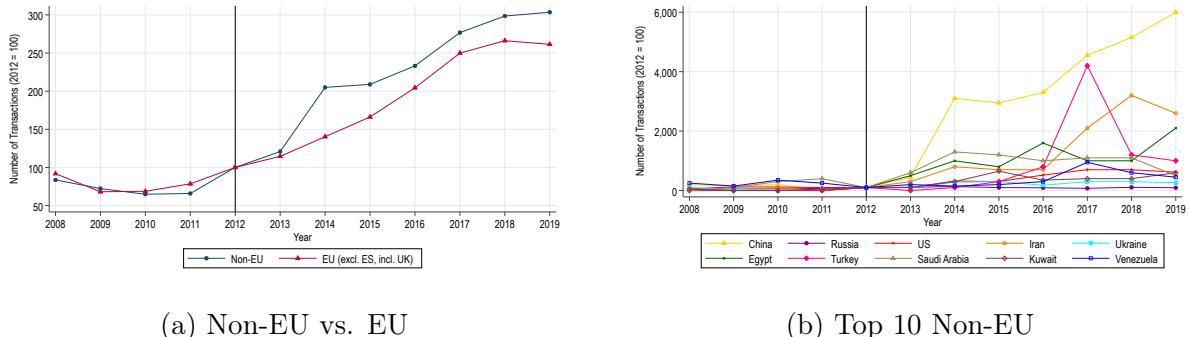
(4) 2023 zip code shapefiles from INE to determine neighboring postal codes.

Summary statistics for all transaction-level and municipality-level variables are provided in Appendix Table B1 and B2, respectively. The statistics are presented separately for Spanish, EU, and non-EU buyers, as well as for the full sample.

## 4 Descriptive Evidence

As initial visual evidence, we compare the evolution of golden visa real estate transactions (i.e., those above 500,000 Euro net of mortgages) between non-EU and EU investors. EU investors should not be responding to the golden visa programme, as they have the right to reside and move freely within the European Union. Figure 4a shows that non-EU investors experienced on average 3.83% more growth in the number of these high-end real estate transactions than EU investors between 2012 and 2019. Note that most of the growth happened post-2014, since the programme was first introduced in September 28, 2013. This differential growth in the number of transactions between non-EU and EU investors appears to be driven by the programme, since the two groups of investors had a very similar evolution in the number of real estate transactions prior to the introduction of the scheme.

Figure 4: Real estate transactions above 500,000 Euro net of mortgages in Spain



(a) Non-EU vs. EU

(b) Top 10 Non-EU

*Notes:* This figure presents the evolution of real estate transactions above 500,000 Euro net of mortgages over the period 2008-2019 in Spain. Panel (a) compares the evolution of transactions between non-EU and EU investors. The EU investors group excludes transactions made by Spaniards, but includes all transactions made by UK nationals, as the latter still part of the EU during that period of time. Panel (b) shows the evolution of these high-end real estate transactions for the top 10 nationalities of non-EU investors. The top 10 nationalities are obtained based on the counts of golden visas investments in real estate from the Spanish registrars dataset since the introduction of the programme on 28 September 2013 up to 31 December 2019. All series are normalized to 100 in 2012.

<sup>6</sup>Details about Eurostat coastal classification is [here](#).

<sup>7</sup>The dataset is available in CSV format on Github and can be accessed [here](#).

The take-up of the programme appears to be heterogeneous across top non-EU investors, with Chinese, Saudi Arabians, Egyptians and Iranians experiencing the fastest growth in transactions in the post-reform relative to the pre-reform period, as shown in Figure 4b. Note that even though Russians are the second largest nationality in terms of golden visas granted according to official statistics (*Boletín Oficial de las Cortes Generales*, 2020), they do not appear to experience as fast growth as other nationalities after the introduction of the scheme. The reason is that they were already buying a similar amount of high-end properties before the introduction of the programme.<sup>8</sup>

There is also heterogeneity in the take-up of the programme across Spanish regions (see Appendix Figure B4). The municipalities with the largest number of acquisitions of real estate by golden visa investors belong to the provinces of Barcelona, Madrid, Canary Islands and the Mediterranean coast, in particular, Málaga, Alicante, the Balearic Islands, Girona and Valencia. This evidence goes in line with the official statistics on golden visas published by *Observatorio Permanente de la Inmigración (OPI)* and already presented in Section 2.

We also examine the distribution of real estate transactions before and after the introduction of the golden visa programme around the 500,000 Euro threshold. Non-EU investors can obtain a golden visa as long as they buy a property above 500,000 Euro net of mortgages. Hence, the programme incentivizes non-EU investors to purchase properties as close as possible to, but above the 500,000 Euro threshold. Figure 5a documents that there is a rightward shift in the distribution of real estate transactions for non-EU investors in the post-reform period relative to the pre-reform period, but Figure 5b shows that this is not the case for EU investors. Furthermore, Figure 5a also documents that non-EU investors buy disproportionately more properties around the 500,000 Euro threshold in the post-reform relative to the pre-reform period, but this is not the case for EU investors, as shown in Figure 5b.<sup>9</sup> Hence, this evidence reveals that only non-EU investors do bunch around the 500,000 Euro threshold as a response to the programme.<sup>10</sup>

Figure 5c shows the distribution of real estate transactions before and after the introduction of the golden visa programme for top non-EU golden visa investors. The rightward shift in the distribution of real estate transactions for non-EU investors in the post-reform period relative to the pre-reform period seems to be largely driven by the top non-EU investors, as shown in Figure 5c. Indeed, Figure 5c shows that these top non-EU investors

<sup>8</sup>Appendix Figure B2 depicts Figure 4 in absolute terms, that is, without normalizing the number of transactions to 2012. Appendix Figure B3 depicts the evolution in the number of high-end transactions (i.e., properties with purchase value of at least 500,000 Euro) among Spaniards.

<sup>9</sup>In line with EU investors, Appendix Figure B5 shows that Spaniards do not buy disproportionately more properties around the 500,000 Euro threshold in the post-reform relative to the pre-reform period either.

<sup>10</sup>Appendix Figure B6 corroborates this evidence by comparing the distribution of real estate transactions of non-EU investors to EU investors in the post-reform period.

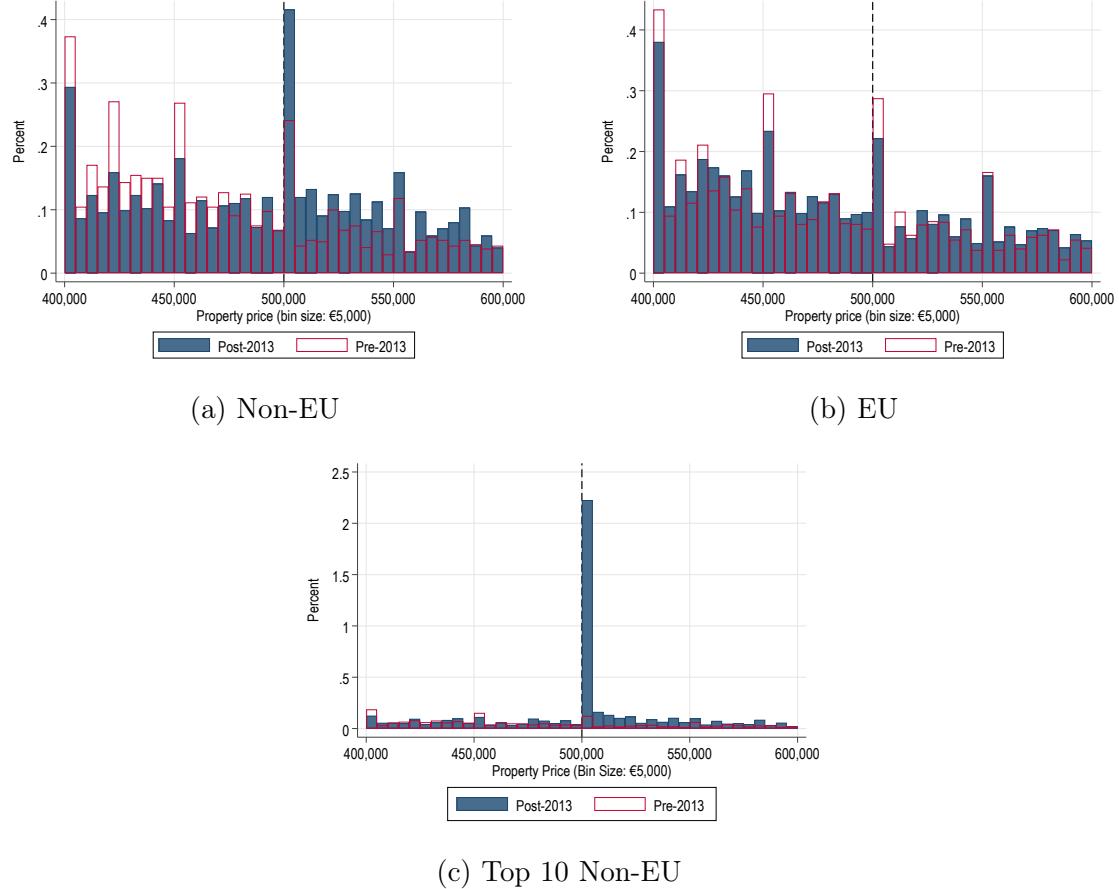


Figure 5: Distribution of real estate transactions in Spain pre- and post-reform for non-EU and EU investors

*Notes: This figure depicts the distribution of real estate transactions in Spain before (1 January, 2008 up to 27 September, 2013) and after the introduction of the programme (28 September, 2013 up to 31 December, 2019) for non-EU and EU investors. The EU investors group excludes transactions made by Spaniards, but includes all transactions made by UK nationals, as the UK was still part of the EU during that period of time. Panels (a) and (b) present the zoomed-in distributions for real estate transactions around the 500,000 Euro threshold (between 400,000 and 600,000 Euro) before and after the introduction of the programme for non-EU and EU investors, respectively. Panel (c) presents the zoomed-in distribution of real estate transactions for top 10 non-EU nationalities around the threshold (between 400,000 and 600,000 Euro) before and after the introduction of the programme. The top 10 nationalities are obtained based on the counts of golden visas investments in real estate from the Spanish registrars dataset since the introduction of the programme on 28 September 2013 up to 31 December 2019. The bin size used is 5,000 Euro.*

buy disproportionately more properties around the 500,000 Euro threshold. Hence, this evidence is reassuring in that the bunchers around the 500,000 Euro threshold are precisely the top golden visa investors.

## 5 Effects on Quantities

This section estimates the causal effect of the Spanish golden visa program on the total number of real estate transactions. To conduct the analysis, we first aggregate transaction-level data into cell-level observations defined by municipality, buyer group (non-EU vs. EU), value range (above vs. below the eligibility threshold), and year. We include all municipalities that have at least one recorded transaction (of any value) during the sample period and assign zeros to cells without transactions. For the baseline specification, we thus consider 723 municipalities, two buyer groups, two property value ranges, and 12 years, which leads to a total of 34,704 observations. We then use our cell-level data to estimate the following triple-difference model using Poisson Pseudo Maximum Likelihood (PPML)<sup>11</sup>:

$$Q_{i,g,r,t} = \exp \left( \beta_0 + \sum_{t=2008}^{2019} \beta_t \times \text{Year}_{t \neq 2012} \cdot \left[ \text{BuyerGroup}_g \cdot \mathbf{1}[\text{Value} \geq 500,000]_r \right] \right. \\ \left. + \theta_t + \gamma_g + \gamma_r + \eta_{g,t} + \lambda_{g,r} + \zeta_{r,t} + \epsilon_{i,t} \right), \quad (1)$$

where  $Q_{i,g,r,t}$  is the number of real estate transactions in municipality  $i$ , for buyer group  $g$ , purchasing in range  $r$ , and year  $t$ . The parameters of interest are thus the annual coefficients on the triple interaction of the year dummies for the period 2008 to 2019 (with 2012 as the baseline), the non-EU buyer group indicator ( $\text{BuyerGroup}_g$ ), which equals 1 for non-EU investors and 0 for EU investors, and  $\mathbf{1}[\text{Value} \geq 500,000]_r$ , which equals 1 for property values equal or above 500,000 Euro, 0 for properties above 400,000 Euro and below 500,000 Euro. We also include year, buyer group, and range fixed effects, as well as all bilateral interactions. The third difference specification makes it possible to control for time-varying shocks (e.g., inflation, house price changes) that differentially affect transactions across both ranges or buyer groups, as well as non-time-varying characteristics that differ across buyer groups in different ranges.

Figure 6 presents the annual estimates of Equation (1). The number of golden visa transactions steadily increases relative to the comparison group (i.e., real estate transactions above 500,000 Euro made by EU investors) up to 2014 and becomes relatively stable from 2014 onwards. The average effect of the difference-in-difference model over the

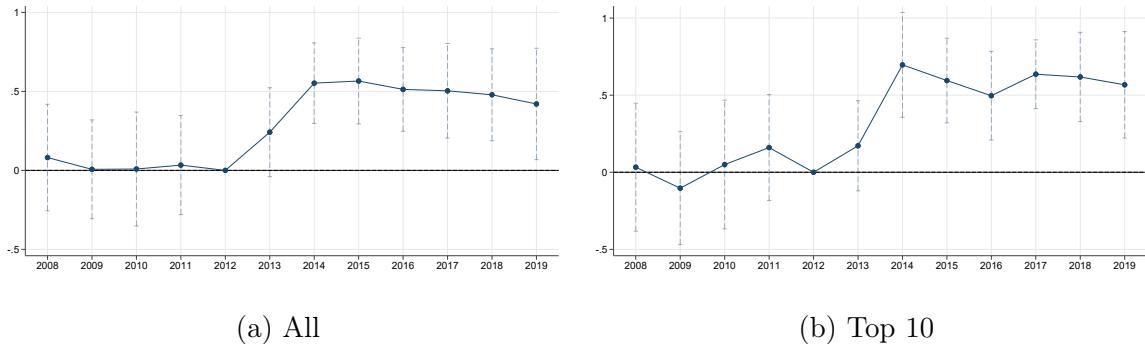
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<sup>11</sup>Since our outcome is a count variable, we use a PPML model for estimation, following Silva and Tenreyro (2006).

entire post-reform period (2013-2019) relative to the pre-reform period (2008-2012) is 43%. We find no significant differences in pre-trends, consistent with the number of real estate transactions below and above the threshold evolving similarly for EU and non-EU investors prior to the introduction of the Spanish golden visa programme. In line with the descriptive evidence shown in Sections 2 and 4, the first year of introduction of the scheme is not significant, as the programme was introduced late in 2013 and the official number of golden visas granted for investments in real estate in that year was quite low (*Boletín Oficial de las Cortes Generales*, 2020).<sup>12</sup>

Figure 6b presents the annual estimates of Equation (1) for the top 10 non-EU investor nationalities. The estimated average post-reform effect is 62.6%, which is larger but not too different to the 43% we find for the entire sample of investors. This analysis indicates that most of the increase in golden visa transactions in the post-reform period is driven by top 10 non-EU investor nationalities.<sup>13</sup>

Figure 6: Triple difference model - Changes in quantities above golden visa threshold



*Notes:* This figure depicts the annual poisson pseudo-maximum-likelihood estimates of Equation (1). Panel (a) presents the estimates for all golden visa transactions above 500,000 among non-EU investors relative to transactions between 400,000-500,000 among EU investors (including Spaniards) normalized to 2012. Panel (b) presents the same estimates where the treatment sample is restricted to the top 10 non-EU investor nationalities. Standard errors are clustered at the municipality level and 95% confidence intervals are plotted.

We then proceed to study the heterogeneity of the Spanish golden visa program on the total number of real estate transactions across price ranges, municipality characteristics and nationalities. For that, we modify the specification of Equation (1) and estimate the aggregate average post-treatment effect relative to the average of the pre-treatment

<sup>12</sup>Appendix Figure C1 shows that our analyses are robust to changes in the range below the 500,000 Euro threshold, although the effect starts losing significance when broadening the range below the 100,000 Euro threshold. This is consistent with the segment of the real estate market below 100,000 Euro not being as comparable to properties above the 500,000 golden visa threshold as those above 100,000 Euro but below 500,000 Euro.

<sup>13</sup>The golden visa can only be granted if at least 500,000 Euro of the value of the property at the time of the transaction is not mortgaged, as explained in Section 2. Hence, we may be miscategorizing some golden visa transactions if the value of the transaction less the mortgage lies below 500,000 Euro. Appendix Figure C2 (C3) shows that our golden visa premium results are robust to the exclusion of non-EU (all) investors holding mortgages.

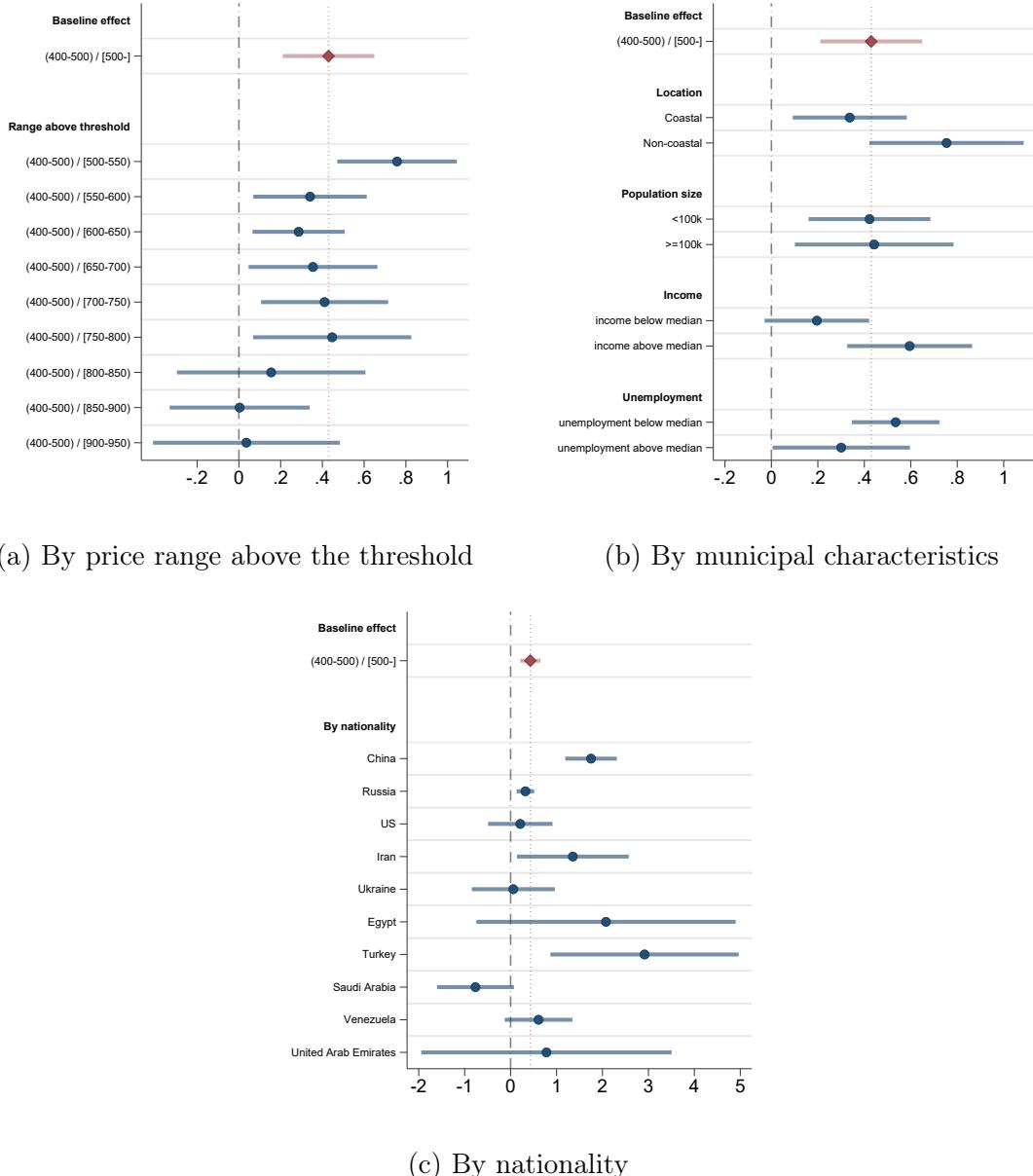
period, by substituting the year dummies with a treatment-period indicator which equals 1 for 2013-2019 and 0 for 2008-2012.

Figure 7a shows that the average post-reform effect varies relative to the average of the pre-reform period when we vary the window of treatment range above 500,000 Euro. The estimated average treatment effect is larger (i.e., 75.8%) in the treatment range just above the eligibility threshold [500,000-550,000], which is consistent with the bunching effects documented in Section 5. Given that the price for obtaining a golden visa is cheaper the closer to the 500,000 Euro threshold the purchase price is, golden visa investors have a preference to buy properties closer to the threshold than away from it. The effects for the middle range of the price distribution are close to the average estimate (i.e., for the group of 550,000-600,000 the effect is 34.1%), but the effects decrease as we move up the price distribution (i.e., for the range 750,000 Euro and above).

Figure 7b documents that the average post-reform effect also varies relative to the average of the pre-reform period across several municipal characteristics, namely coastal versus non-coastal municipalities, population size, income and unemployment. The estimated average treatment effect is positive and significant for both coastal and non-coastal municipalities, but it is significantly larger for non-coastal municipalities (i.e., 33.7% vs. 75.4%). This effect is largely driven by the fact that non-coastal municipalities had almost no high-end real estate transactions purchased by non-EU investors in the pre-reform period. In particular, the pre-reform average number of high-end real estate transactions purchased by non-EU investors was nearly six times larger in coastal versus non-coastal municipalities. The estimated average post-reform effect is also positive and significant for municipalities above or below 100,000 inhabitants, but the coefficients are quite similar across the two groups of municipalities. The estimated average post-reform effect is positive and significant for municipalities with income above median, but positive and non-significant for municipalities with income below median. This indicates that golden visa investors have on average a preference for richer municipalities. Moreover, the estimated average post-reform effect is positive and significant for municipalities with unemployment levels below and above median, but it is significantly larger for municipalities with unemployment levels below median.

Finally, Figure 7c depicts the annual average estimates by nationality. In line with our descriptive figures, Chinese investors experience one of the largest increases, with an average post-reform increase of 175.1% .

Figure 7: Triple difference model - Heterogeneity by price range, municipal characteristics and nationality



*Notes: This figure shows point estimates from a simplified triple difference model where we modify the specification of Equation (1) and estimate the aggregate average post-treatment effect relative to the average of the pre-treatment period, by substituting the year dummies with a treatment-period indicator which equals 1 for 2013-2019 and 0 for 2008-2012. The baseline estimate is thus the average post-reform effect of Figure 6 relative to the pre-reform period. Panel (a) shows the effect for different price ranges, panel (b) for different municipal characteristics, and panel (c) for different nationalities. Standard errors are clustered at the municipality level and 95% confidence intervals are plotted.*

## 6 Effects on Prices

### 6.1 Golden visa premium

This section estimates the causal effect of the Spanish golden visa program on real estate prices. To conduct the analysis, we start by assessing whether golden visa buyers paid a different price for their properties relative to other investors. For that, we use a difference-in-differences approach, comparing the evolution of real estate prices paid by non-EU against those paid by EU and Spanish investors, before and after the introduction of the Spanish golden visa scheme. The regression specification we estimate is as follows:

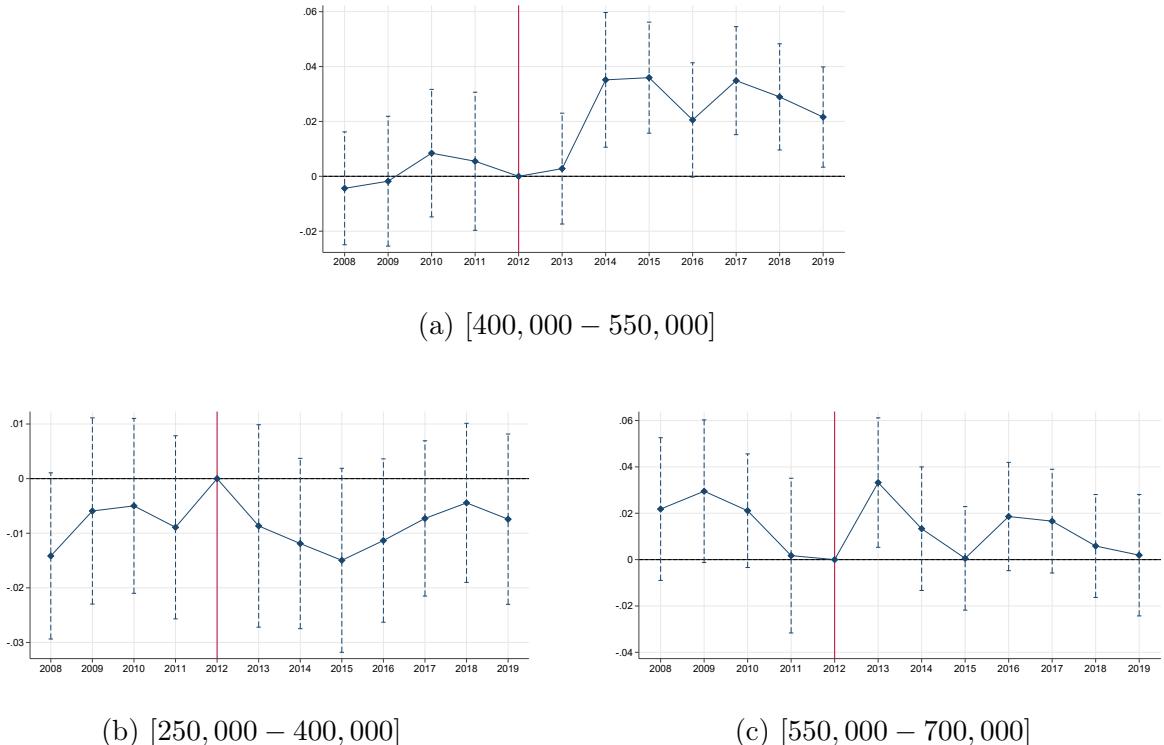
$$\begin{aligned} \ln P_{i,g,z,t} = & \beta_0 + \sum_{t=2008}^{2019} \beta_k \times \text{Year}_{t \neq 2012} \cdot \text{BuyerGroup}_g + X'_{i,t} \\ & + \delta_s + \gamma_a + \alpha_z + \mu_m + \zeta_{z,t} + \lambda_{m,t} + \epsilon_{i,t}, \end{aligned} \quad (2)$$

where  $\ln P_{i,g,z,t}$  is the logarithm of the transaction price for property  $i$ , purchased by buyer group  $g$ , in zip code  $z$ , in year  $t$ . The parameters of interest are the annual coefficients of the interaction between  $\text{BuyerGroup}_g$ , which equals 1 for non-EU investors and 0 for EU and Spaniard investors, and the year dummies for the period 2008 to 2019, using 2012 as baseline year. We include street  $s$ , number of squared meters  $a$ , zip code  $z$ , month  $m$ , as well as interacted zip code and year and month and year fixed effects. Additionally, we control for a wide variety of transaction-level characteristics, in particular, the loan-to-value ratio associated with the property mortgage, and dummies for property subtype (i.e., apartment, terraced house, detached houses, commercial properties, offices, garage, land, etc.), property quality (i.e., new or old), buyer type (i.e., individual or corporation) and seller type (i.e., individual, corporation or public institution). We also include a dummy indicator for whether the buyer and seller have the same nationality. We cluster standard errors at the zip-code level to account for potential spatial correlations in price changes, ensuring robust inference regarding the effects of the programme.

The analysis is conducted for the price range around the 500,000 Euro threshold (i.e., [400,000-550,000]), as well as for the immediate price ranges above and below (i.e., [200,000-400,000] and [550,000-700,000] Euro). Figure 8a illustrates the annual estimates of Equation (2) for properties priced between 400,000 and 550,000 Euro. The first year of introduction of the scheme is not significant for this price range, as the programme was introduced late in 2013 and the official number of golden visas granted for investments in real estate in that year was just 2. The non-EU price premium increases significantly from 2014 onward and stays relatively stable. We find no significant differences in pre-trends for this price range, indicating the absence of a non-EU price premium prior to the

programme's implementation. Figures 8b and 8c depict the annual estimates for price ranges between 250,000-400,000 Euro and 550,000-700,000 Euro, respectively. Neither range shows significant results before or after the introduction of the scheme. All together, these analyses strongly support the existence of a golden visa premium just around the 500,000 Euro threshold. This evidence is consistent with the fact that only when the property purchase value could potentially be below the 500,000 Euro required threshold to obtain the visa, non-EU investors are willing to pay a higher price for the property.<sup>14</sup>

Figure 8: Golden visa premium



*Notes:* This figure depicts the annual coefficients from Equation (2) estimated separately for three distinct price ranges: 200,000-400,000, 400,000-550,000, and 550,000-700,000 Euro. The control group comprises both EU and Spanish investors, with non-EU investors as the treatment group. Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

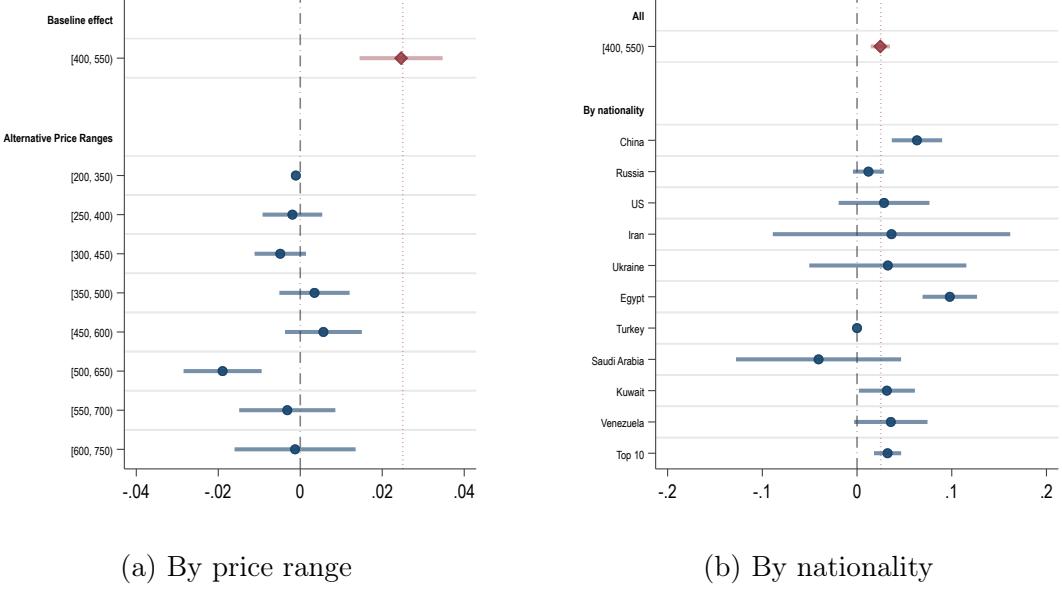
Figure 9a presents the aggregated post-reform effect across different price ranges in steps of 150,000 Euros for the period 2013-2019, relative to the pre-reform baseline (2008-2012), using both EU and Spanish investors as the control group. For this analysis, we modify the regression in Equation (2) by replacing the year dummies with a binary treatment-period indicator which equals to 1 for 2013-2019 and 0 for 2008-2012. The results confirm that the significant positive premium is only concentrated within the 400,000-550,000 Euro price

<sup>14</sup>The golden visa can only be granted if at least 500,000 Euro of the value of the property at the time of the transaction is not mortgaged, as explained in Section 2. Hence, we may be miscategorizing some golden visa transactions if the value of the transaction less the mortgage lies below 500,000 Euro. Appendix Figure C4 (C5) shows that our golden visa premium results are robust to the exclusion of transactions with an attached mortgage by non-EU (all) investors. Our findings are also robust to the use of only EU investors as control group (see Appendix Figure C6).

range, where non-EU investors paid, on average, a premium of 2.5% ( $= \exp(0.025) - 1$ ) relative to EU and Spanish investors during the post-reform period relative to the pre-reform period. This corresponds to an average additional payment of approximately 11,421 Euro, compared to the baseline average price of 456,826 Euro paid by non-EU investors in 2012. The effects are not statistically significant outside this price range except for the 500,000-650,000 Euro band. If non-EU investors anchor on the visa threshold rather than amenity value, they may “over-shop” on price but “under-pay” on quality—showing up as a negative differential for this particular price band. Finally, Figure 9b shows that the observe effect within the 400,000-550,000 Euro range is primarily driven by the top-10 non-EU investor nationalities, with Chinese investors playing a dominant role. These estimates indicate that the impact of the programme was both price- and nationality-specific.

The wide range of fixed effects and controls we use help us to rule out that the golden visa premium we uncover is driven by compositional effects (e.g., non-EU investors selecting fundamentally different properties). To further ensure that our findings are not driven by compositional effects, we replace the outcome variable in Equation (2) with housing characteristics, specifically average surface area and binary indicators for house versus apartment and for new versus pre-owned properties. We carry out the analysis for the 400,000–550,000 Euro price range, that is, the price range for which we observe a golden visa premium. Appendix Figure C7 presents annual estimates for these characteristics. We do not find significant changes between the pre and the post-programme period for these housing attributes within the 400,000-550,000 segment. This evidence corroborates that the golden visa premium we uncover around the 500,000 Euro does not seem to be driven by non-EU investors selecting fundamentally different properties.

Figure 9: Golden visa premium - Heterogeneity



*Notes:* This figure presents point estimates from a difference-in-differences model comparing post-treatment versus pre-treatment periods between investor groups across various price ranges in panel (a) and by nationality in panel (b). Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

## 6.2 Spillovers

This section studies whether the programme has had any additional effect on real estate prices beyond the golden visa premium we document in the previous subsection. For that, we rely on a two-step approach. First, we compute a price index for each year and zip code by running an hedonic regression model by regressing the logarithm of transaction prices  $\ln P_{i,z,t}$  for each transacted property  $i$  in each zip code  $z$  in each year  $t$  on different property-level attributes. More specifically, we run the following specification:

$$\ln P_{i,t,z} = \beta_0 + X'_{i,t} + \theta_t + \mu_m + \alpha_z + \epsilon_{i,t} \quad (3)$$

The attributes we include in the model are: surface area, surface area squared, the loan-to-value ratio associated with the property mortgage, and dummies for property subtype (i.e., apartment, terraced house, detached houses, commercial properties, offices, garage, land, etc.), property quality (i.e., new or pre-owned), buyer type (i.e., individual or corporation) and seller type (i.e., individual, corporation or public institution). We also include a dummy indicator for whether the buyer and seller have the same nationality, as well as year ( $\theta_t$ ) and zip-code ( $\alpha_z$ ) fixed effects. In addition, we also include month ( $\mu_m$ ) fixed effects to adjust for any seasonal fluctuations in prices. This allows us to construct a price index net of property characteristics by adding the constant, fixed effects for time and location, and the residual from the regression model. We then average these price

indices at the zip code and year level to construct  $\ln PriceIdx_{z,t}$ .

Second, we rely on a difference-in-differences approach with treatment intensity where we compare the evolution of real estate prices before and after the introduction of the programme across zip codes with different exposure to the golden visa programme. In particular, we run the following specification:

$$\ln PriceIdx_{z,t} = \beta_0 + \sum_{t=2008}^{2019} \beta_k \times Year_{t \neq 2012} \cdot \overline{\text{Non-EU High-end Share}}_z^{pre} + \gamma X'_{z,t} + \alpha_z + \epsilon_{z,t}, \quad (4)$$

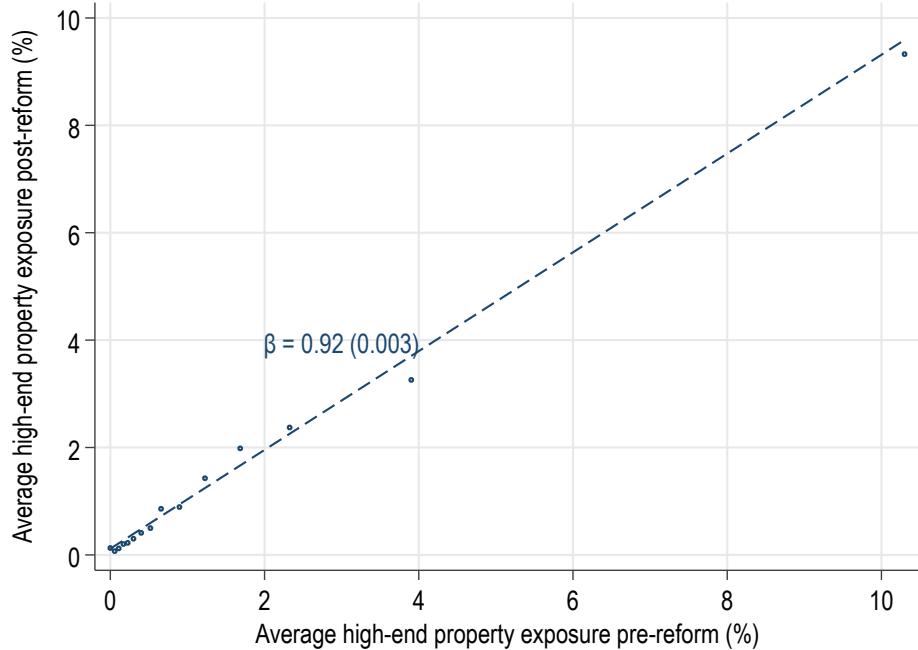
where  $\ln PriceIdx_{z,t}$  is the logarithm of real estate price index in zip code  $z$  in year  $t$ . The parameters of interest are the annual coefficients of the interaction between our exposure measure  $\overline{\text{Non-EU High-end Share}}_z^{pre}$ , which is the average share of high-end transactions (i.e., transactions above 500,000 Euro) out of total real estate transactions purchased by non-EU investors over the pre-reform period 2008-2012 in zip code  $z$ , and the year dummies for the period 2008 to 2019 (using 2012 as baseline year). We include two sets of controls in  $X_{z,t}$ . At the zip-code level, we control for the total number of non-EU transactions, the total number of EU transactions, and the logarithm of the average property surface area within the zip code. At the municipality-level, we control for a range of local economic and housing market conditions, including property taxes on urban real estate, unemployment rate, total and foreign population sizes, the logarithm of annual employment, the ratio of buildable urban land (as a proxy of housing supply constraints), and municipal public expenditure. In addition, we include zip-code fixed effects ( $\alpha_z$ ) to capture unobserved, time-invariant characteristics specific to each zip code that could influence real estate prices. We cluster standard errors at the zip-code level to correct for spatial correlation in price trends.

We choose as exposure measure the pre-existing zip-code level average share of high-end transactions (i.e., transactions above 500,000 Euro) out of total real estate transactions purchased by non-EU investors between 2008 and 2012 (i.e.,  $\overline{\text{Non-EU High-end Share}}_z^{pre}$ ) instead of the contemporaneous zip-level share of golden visa transactions (i.e.,  $GVShare_{z,t}$ ), since the latter may be endogenous for the following two main reasons. First, it may suffer from reverse causality, as higher real estate price growth in certain zip codes could attract more non-EU investors. Second, it may also suffer from omitted variable bias, as there may exist unobserved time-varying factors at the zip-code level, such as changes in local amenities (e.g., new schools, parks, or commercial developments), housing supply dynamics (e.g., new infrastructure projects or zoning changes), or proximity to desirable locations that could simultaneously influence real estate prices and the attractiveness of these areas for golden visa investors. Our exposure measure  $\overline{\text{Non-EU High-end Share}}_z^{pre}$  is thus meant to capture the historical propensity of a zip code to attract non-EU golden

visa transactions based on pre-determined characteristics. The advantage of this share is that it is not contemporaneous—and thus more exogenous—to the post-reform evolution of the real estate market, as it was determined before the introduction of the scheme.

To ensure that our exposure measure (i.e.,  $\overline{\text{Non-EU High-end Share}}_z^{pre}$ ) is actually a good predictor of exposure to the golden visa programme, we examine its relationship with the contemporaneous zip-level average share of golden visa transactions (i.e.,  $\overline{GVShare}_{z,t}$ ) after the introduction of the programme. Figure 10 shows the existence of a strong and statistically significant positive correlation across the historical (i.e., pre-programme) and contemporaneous (i.e., post-programme) measure. The slope coefficient is 0.92, indicating that zip codes with higher historical non-EU high-end real estate activity tended to maintain relatively higher shares of golden visa real estate activity after the introduction of the scheme. The strength of this relationship suggests that our pre-programme exposure measure is a valid predictor of subsequent golden visa transaction intensity at the zip code-level.

Figure 10: Relationship between pre-programme non-EU high-end exposure and post-programme golden visa transaction intensity

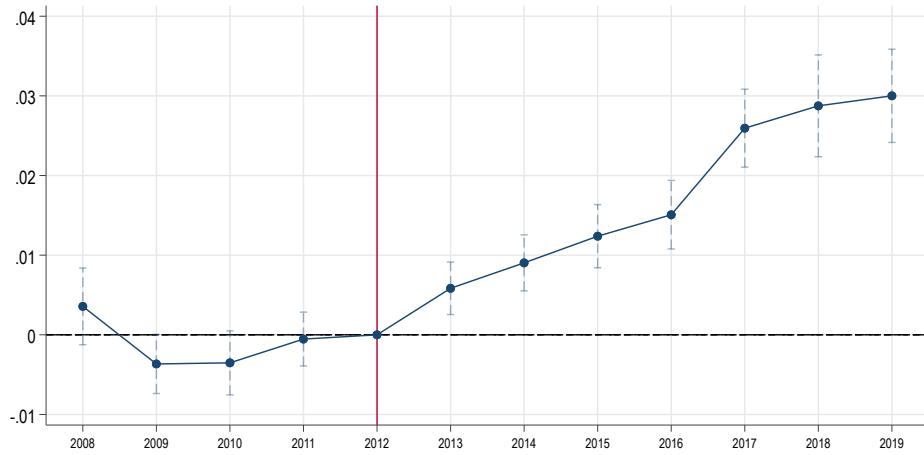


*Notes:* This figure presents the first-stage relationship between average pre-programme and post-programme exposure to high-end property transactions (priced above 500,000 Euro) by non-EU investors across zip codes. Each point represents a zip code bin, and the fitted line reports the estimated slope coefficient from a scatterplot regression with  $\beta = 0.92$  and the std.err. = 0.003.

Figure 11 presents the annual estimates of Equation (4). Prior to the introduction of the programme, there was not a different evolution in real estate prices across zip codes with different ex-ante exposure to golden visa investors. It is only after the introduction of the scheme when real estate prices start to differ across zip codes with different ex-

ante exposure to golden visa investors. The effect is increasing throughout the entire post-reform period. This evidence indicates that the Spanish golden visa programme did have an effect on the real estate market in Spain. To ensure that this evidence supports the existence of a spillover effect and that it is not mechanically driven by the golden visa premium documented in Section 6.1, we generate another version of the price index estimated in Equation 3, but excluding golden visa transactions. Appendix Figure C8 compares the annual estimates of Equation (4) using as outcome variable the baseline price index versus the price index excluding golden visa transactions. The coefficients are nearly indistinguishable across the two specifications, suggesting that the programme clearly had spillover effects on real estate markets beyond the localized golden visa premium around the 500,000 Euro threshold.

Figure 11: Event Study on the Average Price Effect of Golden Visa Programme



*Notes:* This figure depicts the annual estimates from Equation (4). Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

To quantify the average effect of the programme on local real estate prices, we then proceed by modifying the specification of Equation (4) and estimating the aggregate average post-treatment effect relative to the average of the pre-treatment period, by substituting the year dummies with a treatment-period indicator which equals 1 for 2013-2019 and 0 for 2008-2012. Table 1 presents the average post-treatment effect across different specifications: (1) full balanced sample without controls, (2) full balanced sample with controls except for income, (3) income balanced sample with controls including income, (4) income balanced sample with controls excluding income and (5) full unbalanced sample with controls excluding income. The coefficient ranges between 1.4 and 2.1%. Our baseline average-post treatment effect—where we use the balanced sample and all controls—is shown on column (2) and the coefficient is 1.9%. Since the difference between the average share of high-end transactions between the pre- and the post-programme period is approximately 0.1, the zip code that experienced an average increase in the share of 0.1 saw an average increase

in real estate prices of 0.19% (i.e.,  $0.019 \times 0.1 = 0.0019$ ) after the introduction of the scheme.

Table 1: Average Price Effect of the Golden Visa Programme on Local Housing Markets

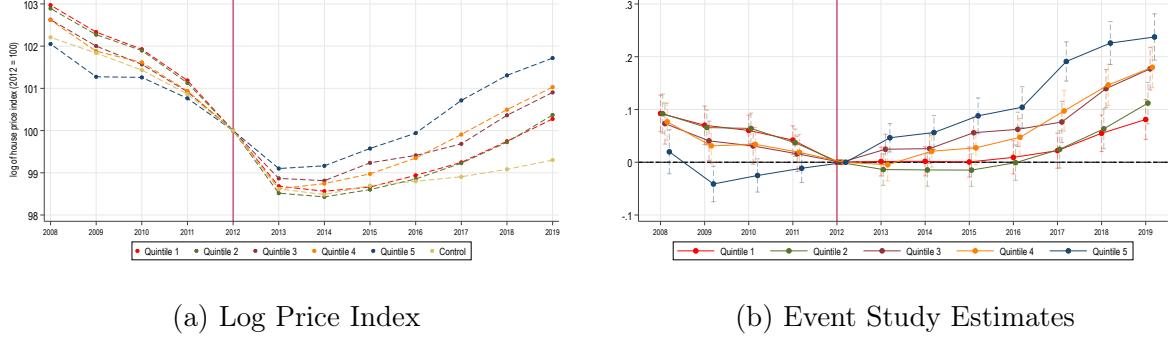
	(1)	(2)	(3)	(4)	(5)	(6)
<b>High-end Exposure <math>\times</math> Post</b>	0.021*** (0.002)	0.019*** (0.002)	0.016*** (0.002)	0.019*** (0.002)	0.014*** (0.002)	0.011*** (0.002)
<b>High-end Exposure <math>\times</math> Coastal <math>\times</math> Post</b>						0.009*** (0.003)
# of Observations	45,795	45,795	27,072	27,072	73,682	45,795
# of Zip codes	3,961	3,961	2,333	2,333	8,420	3,961
Controls	No	w/o income	w/ income	w/o income	w/o income	w/o income
Zipcode FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Samples	All-Balanced	All-Balanced	Income-Balanced	Income-Balanced	All-Unbalanced	All-Balanced
Mean of Dep. Var.	10.64	10.64	10.87	10.87	10.38	10.64
Adj. R-squared	0.825	0.826	0.869	0.867	0.737	0.827
Population (%)	88.73	88.73	81.56	81.56	91.23	88.73

*Notes:* This table reports effects of exposure to the Golden Visa (GV) programme on log housing prices indices at the zip code level. The key variable of interest is the interaction between a zip code's pre-reform share of high-end property transactions attributed to GV investors (non-EU buyers of properties above 500,000 Euro) and a post-policy indicator. Columns vary in the inclusion of controls, sample restrictions, and whether income controls are included. Column (6) includes an additional interaction term with a coastal dummy to assess spatial heterogeneity. All regressions include zip code and year fixed effects, and standard errors are clustered at the zip code level. Balanced samples include zip codes observed in all years. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

We further explore the heterogeneous impact of the programme by grouping zip codes into quintiles ranked by their positive pre-reform average exposure to high-end real estate transactions, i.e. transactions made by non-EU investors above 500,000 Euro. We thus compare each quintile group of zip codes (treatment groups) to zip codes that had no high-end real estate transactions prior to the introduction of the programme (control group). Figure 12a presents the raw evolution of the log housing price index from 2008 to 2019 for each of the five quintile groups and for the control group. The figure reveals a clear divergence in price trends following the introduction of the scheme in 2013: zip codes with greater pre-programme exposure to high-end real estate transactions experienced faster price appreciation after the introduction of the scheme, especially in upper quintiles. Importantly, all five quantile groups have also experienced faster real estate price growth than the control group after the introduction of the programme. This descriptive evidence suggests that the spillover effect may not have been uniform, but instead more important in zip codes that were ex-ante more attractive to non-EU investors.

We then proceed to estimate a more formal event study specification that allows for heterogeneity in treatment intensity across these quintile groups. Figure 12b presents the dynamic treatment effects by quintile, using zip codes with zero golden visa exposure pre-period as the reference group. The estimates confirm the previous patterns: while no pre-trends are evident prior to 2013, especially for higher-exposed zip codes, real estate prices increase across all quintile relative to the control group in the post-reform period. Zip codes in the highest quintile experience the largest average price increase, followed by the next highest quintiles, whereas the lower quintiles show slower and lower price responses. These findings suggest that the programme had spillover effects on local real estate markets and that these are stronger the larger the exposure to the scheme.

Figure 12: Golden Visa Programme and Housing Prices: (a) Raw Trends and (b) Event Study Estimates by Quintile Group



*Notes:* Panel (a) shows the evolution of the log housing price index at the zip code level, normalized to 2012, over the period 2008–2019. Zip codes are grouped into quintiles based on the average pre-treatment share of Golden Visa (GV) purchases by non-EU investors (property price above 500,000 Euro), with Quintile 1 (Q1) having the lowest and Quintile 5 (Q5) the highest share. The control group comprises zip codes with zero GV purchases before the policy implementation. Panel (b) displays event-study estimates of average price effects for each quintile, relative to the control group. Standard errors are clustered at the zip code level, and 95% confidence intervals are shown.

## 7 Conclusion

This paper provides the first causal analysis of the economic effects of the golden visa programme on local real estate markets in Spain. Using rich administrative micro-level data on the universe of real estate transactions, we show that the scheme effectively stimulated foreign real estate investment by non-EU investors.

Our results indicate a significant increase in the volume of high-value real estate purchases by non-EU investors, with a stable and sizeable effect emerging a few years after the introduction of the programme. We also find evidence of a "golden visa premium" around the 500,000 Euro investment threshold. Specifically, non-EU investors pay on average higher prices for properties just above this threshold, relative to EU and Spanish investors. This premium likely reflects the willingness of non-EU buyers to outbid local purchasers in order to secure the residency benefits tied to qualifying real estate investments. We do not find any golden visa premium along other parts of the real estate price distribution. We additionally document that the scheme had non-negligible spillover effects on local real estate prices.

From a policy perspective, these findings underscore the potential of investor visa schemes to attract foreign capital and stimulate real estate markets, particularly during economic downturns. However, the extent to which these programmes generate broader economic benefits, such as employment growth or rental market expansions, remains an open question. Our next step is to explore these dimensions to provide a more comprehensive assessment of the economic implications of golden visa programmes.

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# Appendix

## A Data cleaning procedure of the Spanish Registrars database

This section provides a detailed description of the data cleaning procedure we follow to arrive to the final sample of the Spanish Registrars database we use in the analyses. This database contains the universe of all real estate transactions that have been officially registered in Spain from 2003 until 2022. Most real estate transactions are registered by the Registrars, as they provide legal security to the buyer for a relatively low cost.

Our data cleaning procedure consists of the following steps:

1. We exclude real estate transactions that have missing data for the property's surface area, transaction value, or contain nonsensical transaction dates.
2. We restrict our analysis to six types of urban real estate properties<sup>15</sup>: specifically, apartments with or without annexes, terraced houses, detached houses, commercial properties, and offices. We exclude public and state subsidized housing, keeping only properties sold at market prices without government-imposed price controls or subsidies. Additionally, we focus solely on transactions made by individual or corporate buyers, thereby excluding properties bought by various types of legal entities such as the national government, regional governments, provincial administrative bodies, island councils, associations of municipalities, municipal governments, and smaller local administrative units within municipalities. We also keep transactions involving purchase and sale agreements between parties, excluding those arising from barters, inheritances, or donations. We remove duplicate transactions—those recorded multiple times with the same location, price, house type, etc.—and retain only unique transactions in our sample. Since buyer nationality is crucial to our analysis, we retain only transactions where this information is available.
3. We exclude transactions containing inaccurate information regarding the municipality location.

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<sup>15</sup>Our dataset comprises properties classified into three main categories: (1) rural properties, which include dryland farming (agricultural land reliant on rainfall), irrigated land (agricultural land with artificial irrigation systems), rural housing (residential properties located in rural areas), rural agricultural buildings (structures used for agricultural purposes in rural areas), properties dedicated to agricultural production activities, and miscellaneous rural properties not classified above; (2) urban properties, which include apartments with additional spaces such as storage rooms or parking spaces, standalone apartments without additional attached spaces, terraced houses that share common walls with neighboring properties, detached houses, commercial properties used for activities like shops or restaurants, garages, offices, storage rooms, unbuilt land, industrial warehouses, other buildings, and urban development rights; and (3) other natures, including rights granted by government entities to use public property, buildings constructed for residential purposes, and properties that do not fit into the rural or urban categories.

4. We address outliers by trimming 1% from both the lower and upper tails of the following two main variables: value of the transaction and size of the property. This step ensures that the combination of value, size and price per square meter falls within reasonable ranges.
5. We also clean the zip code variable, as our empirical analysis in Section 6 requires zip code-level fixed effects. This was achieved through a multi-step process:
  - First, we remove transactions that either lack a meaningful street name or have missing zip codes.
  - Second, using a dataset that links municipalities to zip codes, we retain transactions with accurate municipality-zip code pairs and correct those in small municipalities with only one zip code.
  - Third, we web-scraped information on street names and corresponding zip codes for every municipality and province in Spain from a website<sup>16</sup>. We used this dataset to correct transactions with incorrect zip codes, provided the municipality and street name perfectly matched the scraped data.
  - Fourth, for the remaining transactions, we applied fuzzy matching on street names against the web-scraped data to correct invalid zip codes. We retained matches with a similarity score higher than 0.7<sup>17</sup> and, for cases with multiple matches, selected the one with the highest score for each municipality-street name combination.
  - Finally, using transactions with verified municipality-street name-zip code combinations, we corrected the zip codes for the remaining transactions by matching them based on municipality and street names.
6. Finally, to study the spillover effects of the programme, we calculate the number of Golden Visa transactions for all neighboring zip codes of each zip code. Using both the geospatial file for zip codes in Spain and the zip code-municipality matching data, we achieve this task. It is important to note that zip code and municipality boundaries do not always align perfectly. A single zip code may span multiple municipalities, meaning its geographic coverage can cross municipal boundaries.

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<sup>16</sup><https://codigo-postal.info/>

<sup>17</sup>When selecting the threshold for the similarity score, there is always a trade-off. A higher threshold results in fewer matched observations but a lower false positive rate, while a lower threshold increases the number of matched observations at the cost of a higher false positive rate. In Table A3, we report the number of fuzzy-matched pairs between street names from the Registrars dataset and the web-scraped dataset, using thresholds ranging from 0.5 to 0.9. From these fuzzy-matched pairs, we randomly retain 1% of the sample for manual validation to assess the false positive rate, with the results documented accordingly. To strike a balance between maximizing matched pairs and minimizing the false positive rate, we select a similarity score threshold of 0.7

First, we determine the relationship between zip codes and municipalities, checking whether a zip code is strictly contained within a municipality. If not, we calculate the intersection area between a zip code and a municipality. This process is applied to the zip code-municipality geo-matched dataset to verify which pairs are correctly or incorrectly matched. For zip codes with missing municipality information after the initial matching step, we perform a spatial join to attach the nearest municipality to each zip code. For those remaining zip codes that do not have a correct municipality pair, we determine their nearest municipality using calculated spatial distance. Once the zip code-municipality pairs are established, we can then identify all neighboring zip codes for each pair.

7. We limit our analysis to the period from 2008 to 2019. We exclude years 2003 to 2007, since they do not contain full information on nationality, which is the key variable we need to evaluate the programme. We also exclude the period from 2020 onward to avoid the confounding effects caused by the significant decline in real estate transactions during the COVID-19 pandemic.

As a result, our cleaned final sample, consisting of transactions with correct zip codes, comprises 3,878,873 observations, representing 13.17% of the original raw Registrars sample. Table [A1](#) summarizes the data cleaning process. Table [A2](#) describes the final number of observations we use every single year, the total number of municipalities covered, as well as the overall population share they represent.

Table A1: Registrars data cleaning procedure

Steps	Observations	Share
Raw data	29,448,422	100.00%
Keep properties with non-missing transaction values	29,420,357	99.90%
Keep properties with positive surface area	28,541,171	96.92%
Keep properties with valid transaction dates	27,713,578	94.11%
Keep urban housing properties	14,572,968	49.49%
Keep free housing transactions	11,944,125	40.56%
Keep transactions involving individuals or corporate buyers	11,928,027	40.50%
Keep purchase and sale transactions	9,228,489	31.34%
Keep unique transactions	8,963,141	30.44%
Keep transactions with known buyer nationality	6,537,356	22.20%
Keep transactions with accurate municipality information	6,536,726	22.20%
Trim property values at the 1st and 99th percentiles	6,406,125	21.75%
Trim property sizes at the 1st and 99th percentiles	6,278,019	21.32%
Keep transactions with nonzero zip codes and non-missing street names	6,233,068	21.17%
Keep transactions with corrected zip codes	6,160,184	20.92%
Keep transactions from the years 2008 to 2019	3,878,873	13.17%
<b>Final data</b>	<b>3,878,873</b>	<b>13.17%</b>

*Notes: This table outlines the different steps taken to clean the Spanish Registrars database, detailing the number of remaining observations at each stage and the corresponding percentage of the initial raw sample retained.*

Table A2: Annual Real Estate Transactions

Year	Total	Municipality Covered	Population Share
2008	389,035	5,610	98.49%
2009	317,965	5,312	98.28%
2010	348,394	5,453	98.46%
2011	238,495	5,173	98.04%
2012	259,855	5,028	97.97%
2013	214,900	4,898	97.76%
2014	261,692	5,153	98.14%
2015	288,122	5,231	98.32%
2016	331,197	5,396	98.47%
2017	394,172	5,570	98.67%
2018	433,496	5,693	98.83%
2019	401,550	5,639	98.82%
Total	3,878,873		

*Notes:* This table presents the total number of annual real estate transactions (column 1) and the corresponding number of municipalities covered each year in the dataset (column 2). Column 3 reports the percentage of the population covered for each year.

Table A3: Registrars street name fuzzy matching threshold comparison

Similarity Score Threshold	Observations	1% Random Sample	FP Rate (%)
0.5	35,591	356	27.0
0.6	27,927	279	16.8
0.7	19,888	199	9.5
0.8	11,660	117	4.3
0.9	3,820	38	0

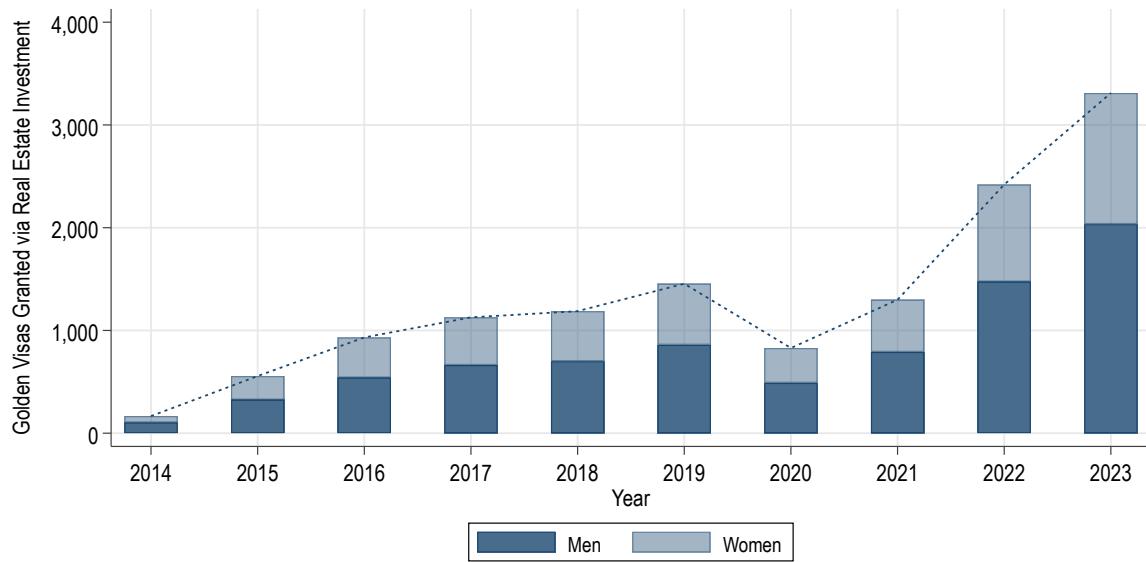
*Notes:* This table summarizes the results of a fuzzy matching exercise comparing street names from the Registrars dataset with those from a web-scraped dataset. Matches are generated using varying similarity score thresholds, ranging from 0.5 to 0.9. For each threshold, we report the total number of matched pairs in column 2, along with a 1% random subsample manually validated to assess match quality (column 3). The final column reports the estimated false positive (FP) rate based on this manual review.

## B Additional descriptive evidence

Figure B1: Golden visas granted via real estate investments



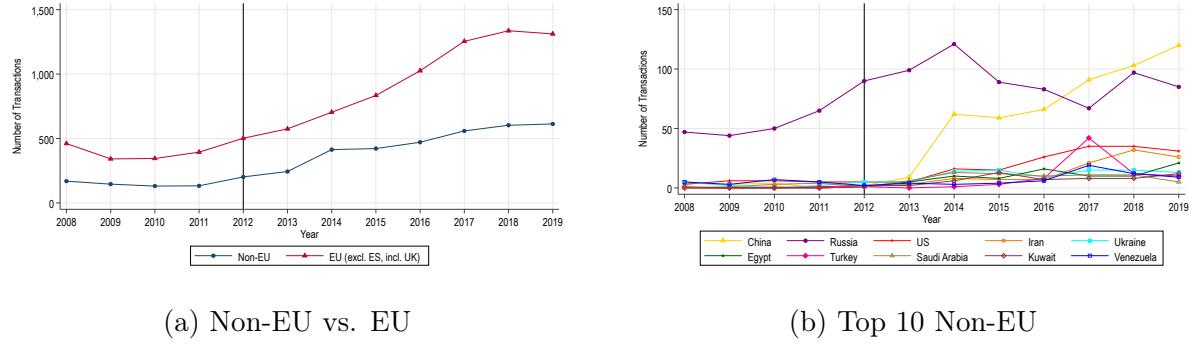
(a) By age group



(b) By gender

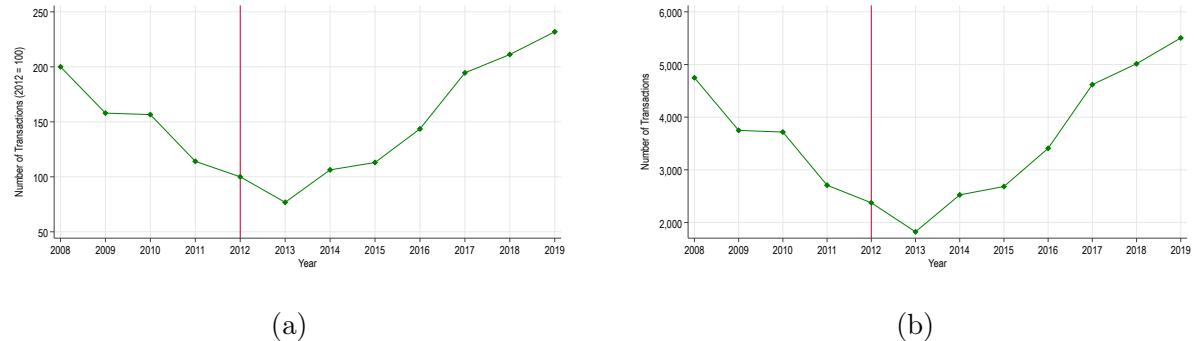
*Notes:* This figure depicts the annual evolution of golden visas initially granted to primary applicants through real estate investments in Spain from 2014 to 2023, decomposed by (a) age group and (b) gender. The data is sourced from [Observatorio Permanente de la Inmigración \(OPI\)](#).

Figure B2: Foreign real estate transactions above 500,000 Euro net of mortgages in Spain



*Notes:* This figure presents the evolution of real estate transactions above 500,000 Euro net of mortgages over the period 2008-2019 in Spain. Panel (a) compares the evolution of transactions between non-EU and EU investors. The EU investors group excludes transactions made by Spaniards, but includes all transactions made by UK nationals (as the UK was still part of the EU during that period of time). Panel (b) shows the evolution of these high-end real estate transactions for the top 10 nationalities of non-EU investors. The top 10 nationalities are obtained based on the counts of golden visas investments in real estate over the post-reform period (28 September, 2013 up to 31 December, 2019) using registrars dataset.

Figure B3: Real estate transactions above 500,000 Euro net of mortgages purchased by Spaniards



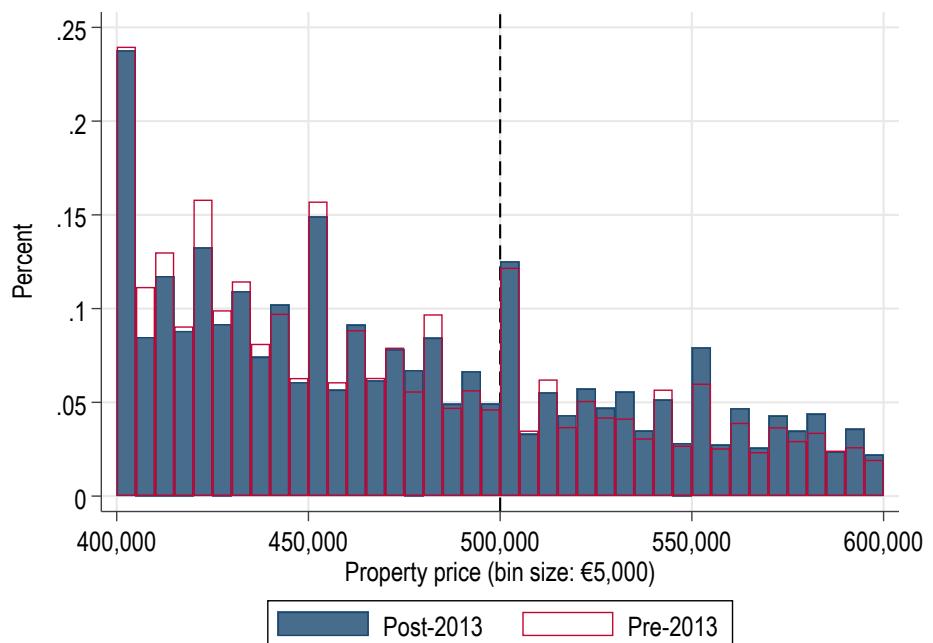
Notes: This figure shows the evolution of real estate transactions by Spanish nationals for properties priced above 500,000 Euro net of mortgages, over the period 2008-2019 in Spain. Panel (a) shows the index of transactions normalized to 100 in 2012, while Panel (b) reports the total number of transactions.

Figure B4: Distribution of real estate transactions acquired through the Spanish Golden Visa programme across Spanish municipalities



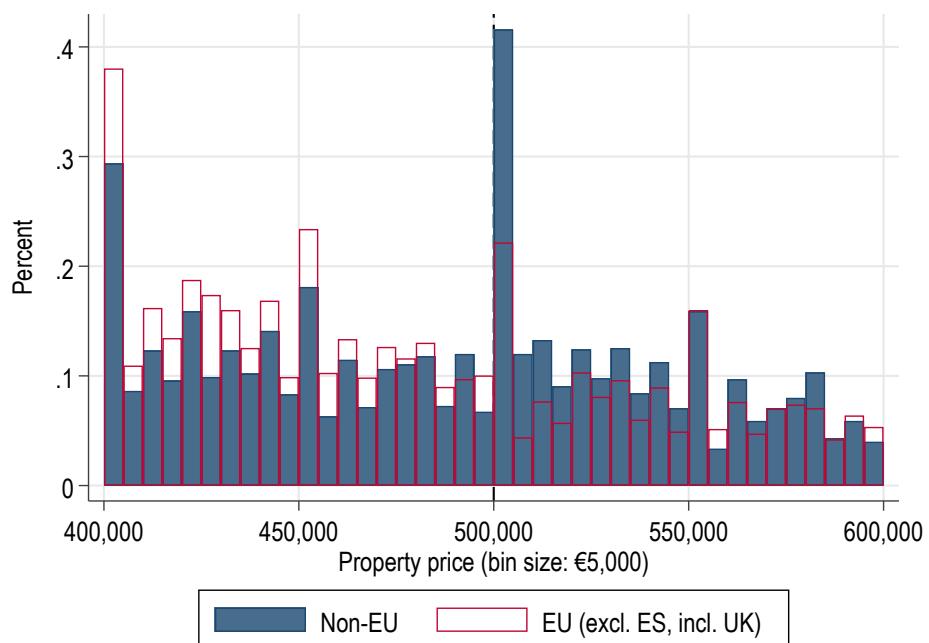
Notes: This figure depicts the distribution of real estate investments made by golden visa investors between September 28, 2013, and December 31, 2019 across Spanish municipalities. The map has been built based on the Spanish Registrars real estate transactions database. Our proxy for golden visas in the registrars is any transaction above 500,000 Euro excluding mortgage made by a non-EU investor. The black borders delineate the different Spanish provinces.

Figure B5: Distribution of real estate transactions in Spain pre- and post-reform among Spaniards



Notes: This figure shows the distribution of real estate transactions in Spain by Spanish nationals before (1 January, 2008 up to 27 September, 2013) and after (28 September, 2013 up to 31 December, 2019) the introduction of the Golden Visa programme. The histogram focuses on transactions within the 400,000 to 600,000 Euro range, highlighting the area around the 500,000 Euro eligibility threshold. The bin size used is 5,000 Euro.

Figure B6: Distribution of real estate transactions in Spain post-reform: Non-EU vs. EU investors



Notes: This figure shows the distribution of real estate transactions in Spain after the introduction of the Golden Visa programme (28 September, 2013 up to 31 December, 2019), comparing non-EU and EU investors. The EU investors group excludes transactions made by Spaniards, but includes all transactions made by UK nationals, as the UK was still part of the EU during that period of time. The histogram focuses on transactions within the 400,000 to 600,000 Euro price range, centering on the 500,000 Euro eligibility threshold. The bin size used is 5,000 Euro.

Table B1: Summary Statistics on Transaction-Level Characteristics, 2012

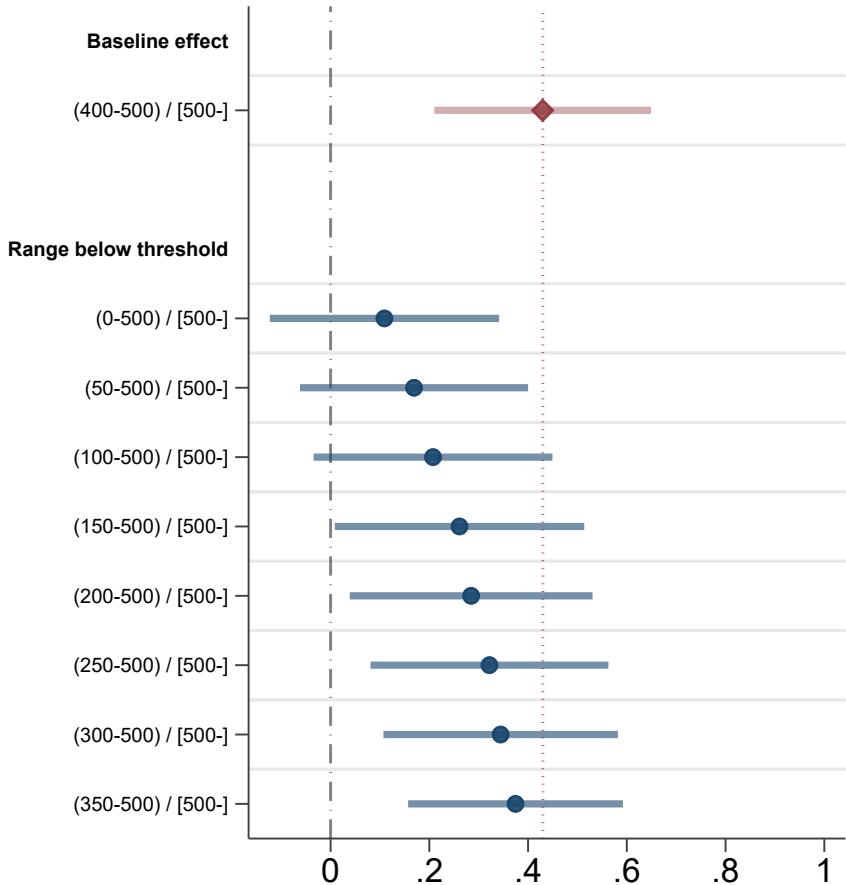
Variables	N	Mean	Std.Dev	Min	Max
<b>Whole Sample:</b>					
<b>Value</b>	259,855	139,865	106,913	6,800	925,000
<b>Surface</b>	259,855	98	50	29	363
<b>Price per sqm</b>	259,855	1,519	994	19	20,087
<b>Loan-to-value(%)</b>	259,855	23	38	0	150
<b>Non-EU Countries:</b>					
<b>Value</b>	9,550	150,706	128,131	6,808	910,000
<b>Surface</b>	9,550	95	50	30	362
<b>Price per sqm</b>	9,550	1,590	1,051	40	11,401
<b>Loan-to-value(%)</b>	9,550	25	38	0	150
<b>EU Countries:</b>					
<b>Value</b>	18,027	162,037	131,103	7,200	925,000
<b>Surface</b>	18,027	97	54	29	362
<b>Price per sqm</b>	18,027	1,708	1,039	57	16,051
<b>Loan-to-value(%)</b>	18,027	10	27	0	150
<b>Spain:</b>					
<b>Value</b>	232,278	137,698	103,590	6,800	925,000
<b>Surface</b>	232,278	98	50	29	363
<b>Price per sqm</b>	232,278	1,502	987	19	20,087
<b>Loan-to-value(%)</b>	232,278	24	39	0	150

Table B2: Summary Statistics on Municipality-Level Characteristics, 2012

Variables	N	Mean	Std.Dev	Min	Max
<b>Whole Sample:</b>					
<b>Number of Municipalities</b>	5,028				
<b>Population Covered(%)</b>	5,028	98	0	98	98
<b>Income pca</b>	1,231	7,154	2,777	2,332	25,169
<b>Property tax rate(%)</b>	4,667	61	16	10	123
<b>Unemployment Rate(%)</b>	5,028	8	4	0	25
<b>Buildable Urban Land Ratio(%)</b>	4,691	80	99	0	2,483
<b>Public Expenditure(in Million)</b>	4,793	9	78	0	4,353
<b>Non-EU Countries:</b>					
<b>Number of Municipalities</b>	811				
<b>Population Covered(%)</b>	811	68	0	68	68
<b>Income pca</b>	578	7,585	2,890	2,332	25,169
<b>Property tax rate(%)</b>	766	67	19	29	123
<b>Unemployment Rate(%)</b>	811	10	3	0	22
<b>Buildable Urban Land Ratio(%)</b>	767	88	82	4	989
<b>Public Expenditure(in Million)</b>	787	41	190	0	4,353
<b>EU Countries:</b>					
<b>Number of Municipalities</b>	922				
<b>Population Covered(%)</b>	922	68	0	68	68
<b>Income pca</b>	592	7,481	2,994	2,332	25,169
<b>Property tax rate(%)</b>	878	66	18	29	123
<b>Unemployment Rate(%)</b>	922	9	3	2	22
<b>Buildable Urban Land Ratio(%)</b>	881	89	112	3	2,483
<b>Public Expenditure(in Million)</b>	895	36	179	0	4,353
<b>Spain:</b>					
<b>Number of Municipalities</b>	4,990				
<b>Population Covered(%)</b>	4,990	98	0	98	98
<b>Income pca</b>	1,230	7,157	2,776	2,332	25,169
<b>Property tax rate(%)</b>	4,631	61	16	10	123
<b>Unemployment Rate(%)</b>	4,990	8	4	0	25
<b>Buildable Urban Land Ratio(%)</b>	4,654	80	98	0	2,483
<b>Public Expenditure(in Million)</b>	4,757	9	79	0	4,353

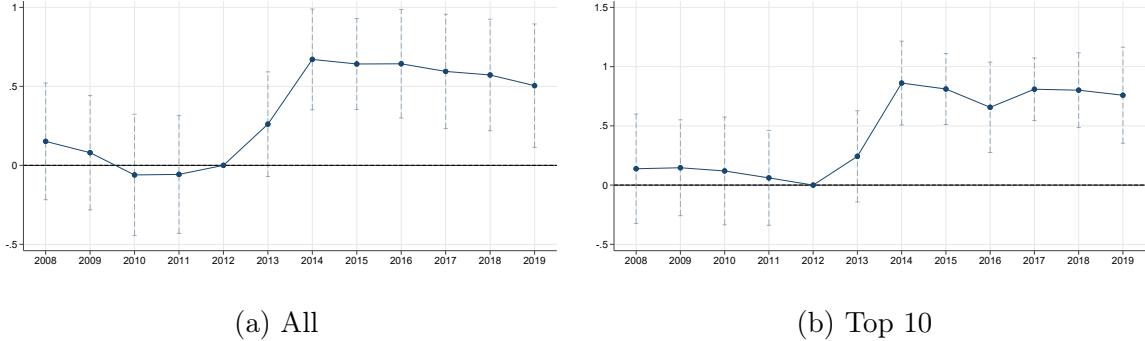
## C Robustness checks

Figure C1: Changes in quantities - Heterogeneity by price range below threshold



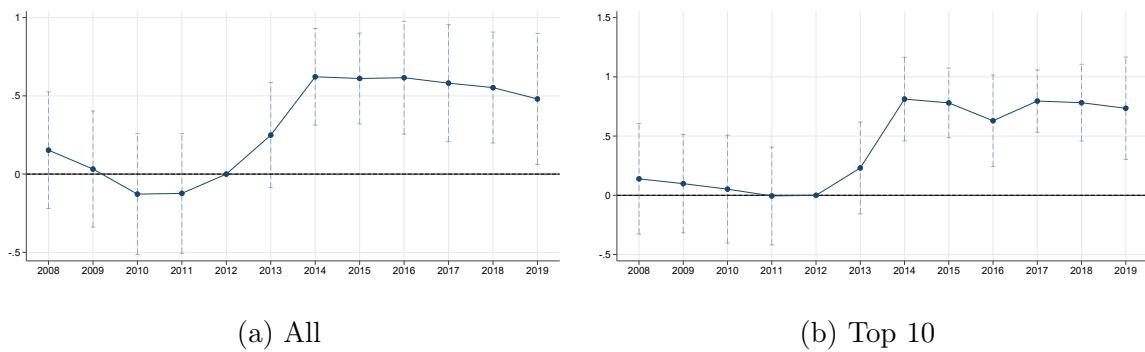
*Notes:* This figure shows point estimates from a simplified triple difference model where we modify the specification of Equation (1) and estimate the aggregate average post-treatment effect relative to the average of the pre-treatment period, by substituting the year dummies with a treatment-period indicator which equals 1 for 2013-2019 and 0 for 2008-2012. The baseline estimate is thus the average post-reform effect of Figure 6 relative to the pre-reform period. The figure also shows the effect for different price ranges below the threshold. Standard errors are clustered at the municipality level and 95% confidence intervals are plotted.

Figure C2: Changes in quantities above golden visa threshold – Excluding non-EU transactions with mortgages



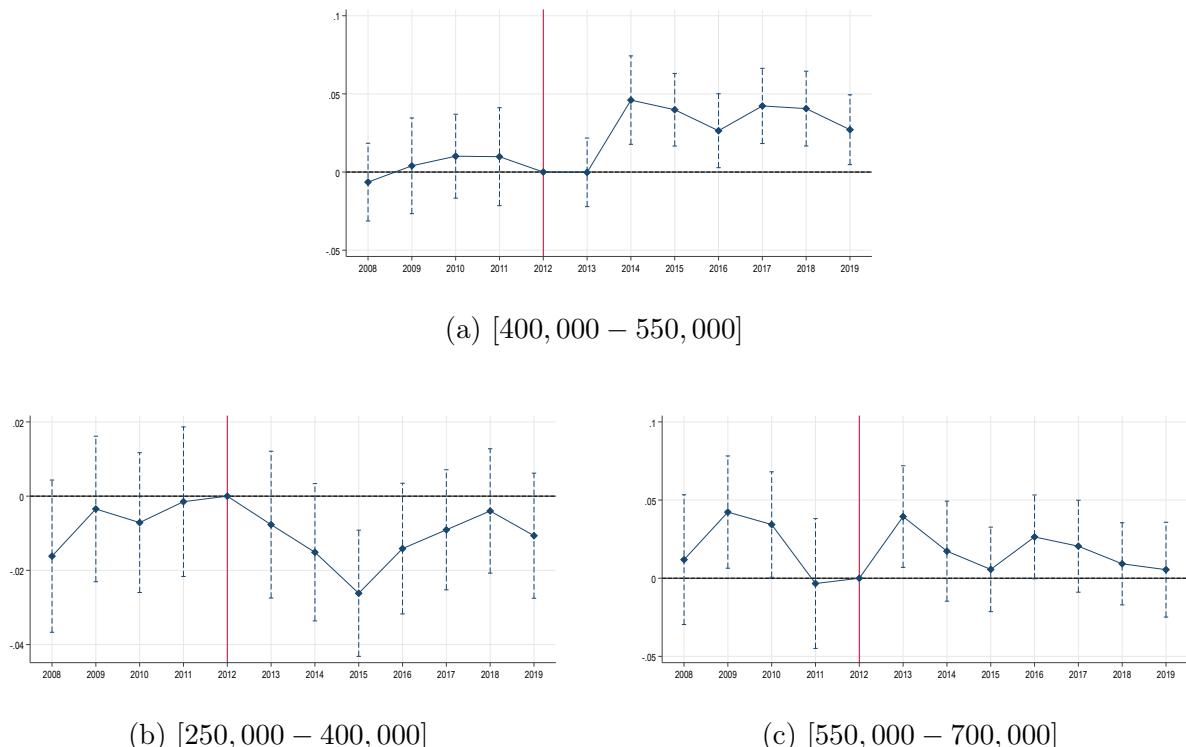
*Notes:* This figure depicts the annual poisson pseudo-maximum-likelihood estimates of Equation (1). Panel (a) presents the estimates for all golden visa transactions above 500,000 among non-EU investors relative to transactions between 400,000-500,000 among EU investors (including Spaniards) normalized to 2012. Panel (b) presents the same estimates where the treatment sample is restricted to the top 10 non-EU investor nationalities. Transactions by non-EU buyers involving a mortgage are excluded from the sample. Standard errors are clustered at the municipality level and 95% confidence intervals are plotted.

Figure C3: Changes in quantities above golden visa threshold – Excluding all transactions with mortgages



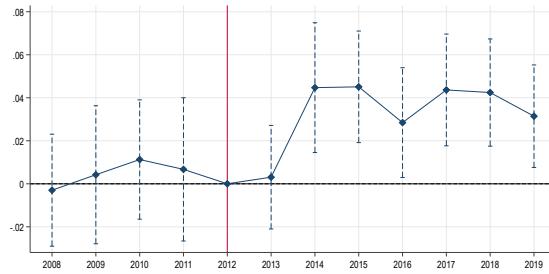
*Notes:* This figure depicts the annual poisson pseudo-maximum-likelihood estimates of Equation (1). Panel (a) presents the estimates for all golden visa transactions above 500,000 among non-EU investors relative to transactions between 400,000-500,000 among EU investors (including Spaniards) normalized to 2012. Panel (b) presents the same estimates where the treatment sample is restricted to the top 10 non-EU investor nationalities. Transactions involving a mortgage are excluded from the sample. Standard errors are clustered at the municipality level and 95% confidence intervals are plotted.

Figure C4: Golden visa premium – Excluding non-EU transactions with mortgages

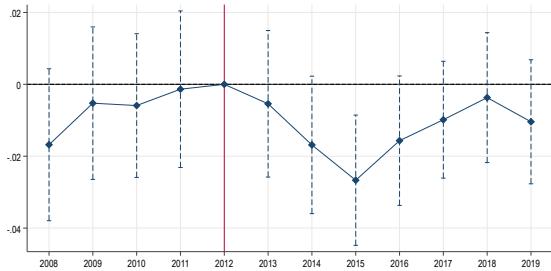


*Notes:* This figure presents the annual estimates from Equation (2), using EU and Spaniard buyers as the control group. Transactions by non-EU buyers involving a mortgage are excluded from the sample. Estimates are reported separately for three property price ranges: 200,000-400,000, 400,000-550,000, and 550,000-700,000 Euro. Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

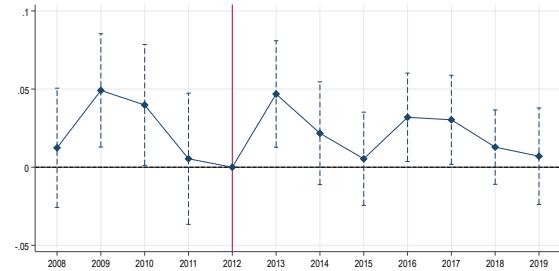
Figure C5: Golden visa premium – Excluding all transactions with mortgages



(a) [400,000 – 550,000]



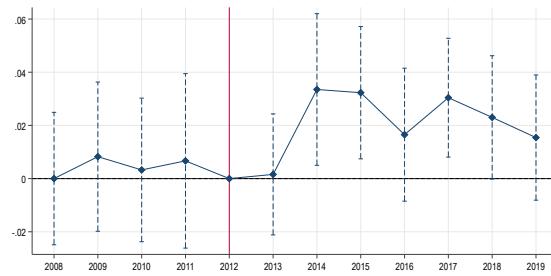
(b) [250,000 – 400,000]



(c) [550,000 – 700,000]

*Notes:* This figure presents the annual estimates from Equation (2), using EU and Spaniard buyers as the control group. Transactions involving a mortgage are excluded from the sample. Estimates are reported separately for three property price ranges: 200,000-400,000, 400,000-550,000, and 550,000-700,000 Euro. Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

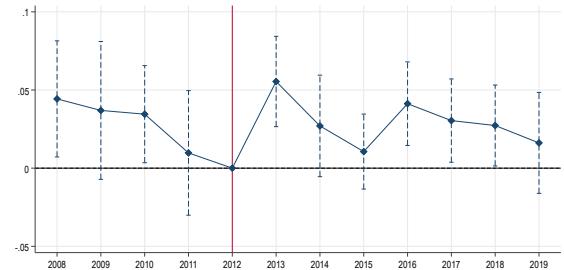
Figure C6: Golden visa premium – Using only EU as control group



(a) [400,000 – 550,000]



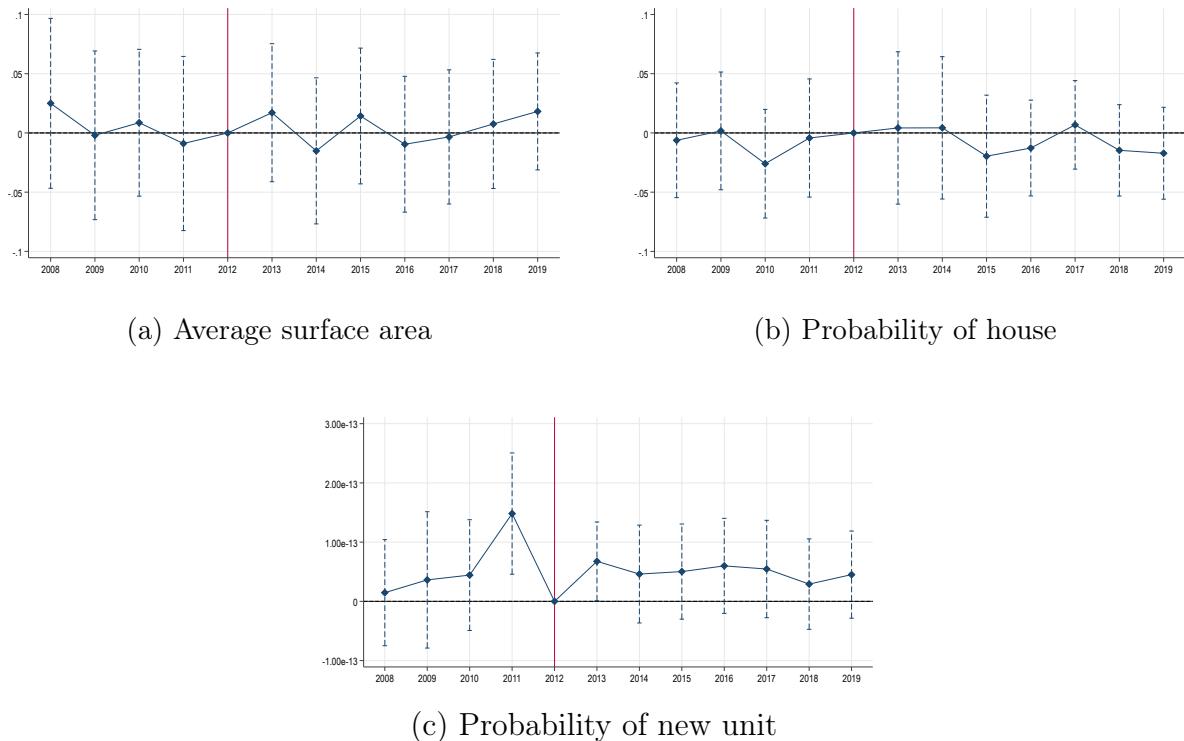
(b) [250,000 – 400,000]



(c) [550,000 – 700,000]

*Notes:* This figure depicts the annual estimates of Equation (2), using only EU buyers (excluding Spanish nationals) as the control group. Estimates are reported separately for three property price ranges: 200,000-400,000, 400,000-550,000, and 550,000-700,000 Euro. Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

Figure C7: Golden visa premium - Composition effects



*Notes:* This figure depicts the annual estimates of variations of Equation (2) where the outcome is now the average surface area and a binary indicator for a house (with respect to an apartment) and for new units (with respect to pre-owned units). Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.

Figure C8: Event Study on the Average Price Effect of Golden Visa Programme



*Notes:* This figure depicts the annual estimates from Equation (4). Standard errors are clustered at the zip-code level and 95% confidence intervals are plotted.