Foreign direct investments and the supply of housing

Chiara Banti and Kate Phylaktis*

Preliminary draft, comments are welcome

Abstract

In this paper we explore the dynamics of foreign direct investment (FDI) and house price growth in a cross-country setting with project-level data on FDI and house prices for a panel of 227 cities in 22 countries for the period 2003-2021. We first investigate the sensitivity of new housing supply by foreign investors to house prices. Employing a local projections approach, we find that foreign housing supply is inelastic in the short run, but the responsiveness of FDI to house prices is positive and significant in the short to medium term. Turning to the reaction of house price growth to FDI, we find that house price appreciation tends to slow down with foreign investments in housing supply in the medium term.

Keywords: House prices, housing supply elasticity, foreign direct investments.
JEL classification: E44, F21, R11, R31.

*Chiara Banti (corresponding author), cbanti@essex.ac.uk, Essex Business School, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, UK; Kate Phylaktis, K.Phylaktis@city.ac.uk, Bayes Business School (formerly Cass), City St George's, University of London, 106 Bunhill Row, London EC1Y 8TZ, UK.

1 Introduction

In this paper we investigate whether foreign capital can help cool down hot housing markets. Behind the rapid increase in house prices in various countries lies an increasing demand for housing in contexts of relatively inelastic housing supply. The low sensitivity of housing supply to house prices have been explained with land-use regulation tightening (Gyourko, Saiz and Summers, 2008), geographic constraints Saiz (2010), as well as declining construction productivity (Goolsbee and Syverson, 2023). And price elasticity is consequential. Monetary policy impact on housing prices is stronger in inelastic housing markets in the US (Aastveit, Albuquerque and Anundsen, 2020) and around the world (Banerjee, Gorea, Igan and Pinter, 2024). In this paper, we contribute to the understanding of housing supply by considering the role of foreign investors. We study residential real estate foreign direct investments (FDI) that are greenfield residential construction projects across borders. If foreign firms are better positioned to exploit high yield investment opportunities due to their access to foreign capital markets or due to their size (Ball, Meen and Nygaard, 2010), real estate FDI may contribute to reduce house price appreciation in supply-constrained housing markets. We explore this question by exploiting a detailed project-level FDI dataset and house price data for 227 cities across 22 countries from 2003 to 2021.

Comparing population growth and construction activity, Figure 2 shows that the average annual growth in building permits is well below the average rate of growth of the urban resident population. Indeed, in many countries around the world, there is a tendency for housing supply to lag behind housing demand. The fast rising demand for housing in a context of relatively unresponsive supply is reflected in the sustained increase in house prices (Figure 3 panel a). Although this is a global trend, Figure 3 (panel b) shows differences across countries. Although real house prices have increased in most countries on average, some countries exhibit relative irresponsive housing supply, with low, or even negative, changes in building permits. Other countries show positive increases in building activity in the face of positive house price growth.

We make two main contributions to the literature. First, we contribute to the literature on the elasticity of housing supply. The literature has investigated housing supply from reduced form of the house price equation from long-run supply and demand functions (e.g., Malpezzi and Maclennan (2001); Harter-Dreiman (2004)), while others estimate directly the housing supply as a function of a set of drivers including house

prices, and other cost shifters (DiPasquale and Wheaton, 1994; Mayer and Somerville, 2000; Aastveit, Albuquerque and Anundsen, 2020; Banerjee et al., 2024).[1] The literature has explored heterogeneity in price elasticity of housing supply and largely focused on the differences in various aspects across housing markets in metropolitan areas in the US (Mayer and Somerville, 2000; Harter-Dreiman, 2004; Aastveit, Albuquerque and Anundsen, 2020), and other few countries including cities in the UK (Hilber and Vermeulen, 2016). Some studies have also investigated a cross-country perspective (Malpezzi and Maclennan, 2001; Ball, Meen and Nygaard, 2010; Banerjee et al., 2024). Exploiting a cross-country setting, we explore elasticities of new housing supply by focusing on foreign residential real estate investors, and estimate their contribution to housing supply in cities around the world.

We also contribute to the ample evidence in the literature of the significant exposure of house prices to capital flows (Aizenman and Jinjarak, 2009, 2014; Tillmann, 2013; Favilukis, Kohn, Ludvigson and Van Nieuwerburgh, 2013; Davids, 2020; Gorback and Keys, 2020; Barcelona, Converse and Wong, 2021; Cvijanovic and Spaenjers, 2021; Favilukis and Van Nieuwerburgh, 2021). Documenting the role of London housing market as a prime destination for global capital, Badarinza and Ramadorai (2018) show that the London housing market is significantly exposed to foreign country risk. Private equity entry in real estate also attracted recent attention for its effect on housing affordability (Fields and Uffer, 2016; Christophers, 2022). We add to this literature by investigating the role of a particular type of capital flows, FDI, on housing markets via the effect on housing supply.

Focusing on a panel of 450 projects in 227 cities in 22 countries from 41 source countries for the period 2003 to 2021, we first estimate the sensitivity of FDI to changes in house prices and then we turn to the study of the impact of FDI on the growth of house prices. We employ local projections and instrumental variables (IV-LPs) approach. Following previous work, we instrument house price growth with the growth rate in household disposable income in the cities in our sample. Our IV strategy for FDI relies on a set of push factors related to credit availability and house price growth in the source country to measure the availability of financing and the profitability of the foreign firm construction sector in their home country. We find that

[1] We refer the interested readers to Duca, Muellbauer and Murphy (2021) for a recent comprehensive review of the literature on house price drivers, including the price elasticity of housing supply.

FDI respond to house price growth with a lag. The cumulative effect is positive and significant after 3 to 5 years. We also show that house price growth tend to decline following an increase in FDI. The impact is not immediate, but it happens with a lag of 5 to 7 years, consistent with the timeline of construction projects from announcement to completion. Hence, we show that the foreign supply of new housing in our sample of cities is relatively inelastic in the short run, and it turns to positive and significant in the short to medium run. Also, FDI tend to reduce the pressure on housing markets, as they are associated with lower house price appreciation in the medium term. We test the robustness of our results by estimating a panel VAR model (PVAR) with house prices, FDI and building permit growth.

In the next section we present the data in Section 2. We set up the research strategy of the paper and present the empirical analysis of the impact of FDI on housing markets in Section 3. Section 4 reports robustness tests. Finally, Section 5 concludes.

2 Data

2.1 Real estate FDI

Project level FDI data is from fDi market. The data consists of announced greenfield projects across borders. Information on the projects includes details about the company making the investment, its country of origins, and the location of the real estate investment at the level of the city. In addition to detailed geographical location information, the project level dataset allows to classify projects depending on the sub sector. Given our focus on the residential housing market, we restrict the sub sector to residential building construction (1,759 projects).[2] For each project, fDi reports the number of jobs created and the amount of the investment in USD, generating estimates when values are not available. To avoid measurement errors to drive our results, we measure FDI based on the number of projects, the intensive margin, but we also use the dollar value estimates, the extensive margin, in robustness tests.[3] We exclude projects for which there is no indication of the city of the investment, or when multiple cities are reported. The FDI dataset comprises 1,070 projects for the period January 2003 to December 2021, amounting to approx. $270 bn of total capital expenditures,

[2] There are other dataset for FDI, such as the OECD International Direct Investment Statistics and UNCTAD. However, they do not report sub sectors, nor city level location.

[3] We focus on gross inflows. As opposed to other types of capital flows. This is common in the literature, as net FDI makes little economic sense as flows in different directions do not cancel out (Lipsey, 1999).

and around 950,000 jobs created.

Once matched with the house price and other data, we have a final sample of 450 projects in 227 cities and 22 countries from 41 source countries. Details on FDI data are reported in Table 1A in the Appendix. We conduct our analysis at annual frequency in line with the frequency of the FDI data.

Following previous work on FDI (Jones and Wren, 2016), our data comprises announced projects, as opposed to started ones. Announced data may be problematic in the event that projects are announced but not started. Although this is a limitation of the dataset, the authors have conducted random checks and announced projects do tend to go ahead and get started.

2.2 Housing market data

Annual residential house prices at city level are primarily collected from the OECD Regional House Price Database. Our final sample comprises nominal house price data from the OECD Regional House Price Database for cities in Australia, Bulgaria, Canada, France, Hungary, India, Indonesia, Ireland, Japan, and Mexico. When house price data is not available from the OECD, we turn to national sources. In particular, we rely on national sources for house price data for cities in Belgium, China, Germany, Hong Kong SAR, Israel, Malaysia, Philippines, Poland, Portugal, Romania, Saudi Arabia, Singapore, Spain, Thailand, Turkey, UAE, UK and US. Details on house price data and sources are reported in Table 2A in the Appendix.

To measure housing supply, we consider the issuance of new permits for residential buildings, or similar, collected from the websites of the relevant statistics department in each country. Details on data sources and coverage are provided in Table 3A in the Appendix.

2.3 Controls

Finally, we employ a set of traditional controls for determinants of the demand for housing at city level, such as population growth, unemployment rate, and disposable income growth (Lambie-Hanson, Li and Slonkosky, 2022; Garriga, Gete and Tsouderou, 2023; Banti and Phylaktis, 2024). We also control for country-wide determinants of the demand for housing in the destination country, such as the rate of growth of the real gross domestic product (GDP), domestic real short-term interest rates, and domestic private credit as a share of the GDP of the country (Aizenman and Jinjarak, 2009; Banti and Phylaktis, 2024). As

a key determinant for housing supply, we include the construction cost index (Grimes and Aitken, 2010; Oikarinen, Bourassa, Hoesli and Engblom, 2018; Glaeser and Gyourko, 2018). Finally, our models include time fixed effects to control for the impact of global factors on housing markets.

For our IV approach, we employ a set of determinants for FDI focusing related to the economic performance and credit conditions in the country of origin of the firm making the capital investment abroad. We borrow from the literature on the drivers of housing supply and include the rate of growth of the real GDP, domestic private credit as a share of GDP, inflation proxied by the producer price index, the domestic short-term real interest rates, and the growth rate of domestic house prices (Grimes and Aitken, 2010; Oikarinen et al., 2018; Glaeser and Gyourko, 2018).

Data is mainly from the national sources, the IMF, the OECD, and the BIS. We convert nominal series to constant 2015 dollars with the national CPI index.

In certain specifications we consider the impact of regulation, and we include measures for controls on the entry of foreign investors in domestic real estate (Banti and Phylaktis, 2019). We measure capital controls in real estate with the measures developed by Fernández, Klein, Rebucci, Schindler and Uribe (2015). Moreover, borrowing from trade literature, we control for gravity model factors including bilateral distance, contiguity, and colonial historical links (Anderson and Wincoop, 2003). Data is from Mayer and Zignago (2011).

Details on the variables and data sources are provided in Table 4A in the Appendix.

2.4 Descriptive statistics

Table 1 reports the descriptive statistics of the variables in our analysis. The average annual house price growth in our sample is 0.64% with a relatively high variability, ranging from over 36% to -49%. Countries in our sample receive an annual average of 0.10 projects, worth $18.68 millions. Construction activity measured by the growth rate of residential building permits over the cities in our sample has increased at the rate of 0.06% per annum. At the city level, population growth and disposable income have grown at much higher rates, 1.3% and 3.54% on average respectively. Moreover, construction costs have increased by over 4.5% per year on average in our sample, well above the annual average increase in the general producer price index of 1.93%. Our sample of countries exhibits a large variation in controls on the capital account across time, with countries that are fully open (capital controls of 0) and others that are mostly closed (capital controls

of 1). Finally, countries are also heterogeneous with respect to the ease of doing business in the construction sector, with an average quality of the procedure for building permits of 70.91, ranging from 29.93 to 93.47.

3 Empirical analysis

3.1 The dynamics between house prices and FDI

In order to investigate the sensitivity of new housing supply by foreigners to house price growth, we follow the approach to model the supply of new housing directly as a function of a set of drivers including house prices, and other cost shifters (DiPasquale and Wheaton, 1994; Mayer and Somerville, 2000; Green, Malpezzi and Mayo, 2005; Aastveit, Albuquerque and Anundsen, 2020; Banerjee et al., 2024). Empirically, we employ local projection (LP) method to estimate the impulse response functions at various horizons. Common in studies on the effects of monetary policy shocks also in the context of housing markets (Jordà, Schularick and Taylor, 2015; Aastveit, Albuquerque and Anundsen, 2020), LPs as proposed by Jordà (2005) allow to estimate the responses of a variable of interest to changes in a shock variable at various forecast horizons. Differently than impulse response functions estimated recursively from VAR models, LPs do not need specification and estimation of a dynamic multivariate system, and allow non-linearity. Thus, we employ LPs to study the sensitivity of residential real estate FDI to house price moves, controlling for a set of known determinants borrowing from studies on price elasticity of housing supply and the literature on push and pull factors of capital flows. LPs allow us to explore the effect on foreign investments in the short run when housing supply is generally inelastic, and in the medium to longer run when housing supply is expected to become more responsive. Specifically, we estimate the following equation at each horizon h, as follows:

$$\Delta_h FDI_{i,s,t+h} = \alpha^h_{i\times s} + \alpha^h_t + \beta^h \Delta HP_{i,t} + \gamma^h \Delta W_{i,t} + \sum_{j=1}^{2} \delta_h \Delta X_{i,t-j} + \epsilon_{i,t+h} \quad for \quad h = [0, 1, ..., 10] \qquad (1)$$

where the response variable is $\Delta_h FDI_{i,s,t+h}$ towards city i from source country s at time t, $FDI_{i,s,t}$ at the h horizon in years with h= [0,1, ..., 10]. The shock variable is $\Delta HP_{i,t}$ representing the change in house prices in city i at time t. We also include a set of controls, ΔW, and their lags, ΔX, that are determinants of the housing supply at city and country levels following previous work that has modelled the housing supply

(Mayer and Somerville, 2000; Aastveit, Albuquerque and Anundsen, 2020). As standard in new housing supply equations, we include the construction cost index for each country. Domestic destination country controls, such as real GDP growth, short-term real interest rates, and private credit to GDP are included as well. At city level we include population growth and unemployment rate. We also include the growth in building permits in the city to account for the aggregate increase in the supply of housing. We include city×source country pair and time fixed effects. Following Jordà, Schularick and Taylor (2015), we include 2 lags of the independent variables, and given the timescale of construction projects, we consider horizons up to 10 years. We experiment with different lag structures, and our results remain qualitatively similar. We estimate the model for the full sample period, 2003-2021. We cluster the standard error at city level. Our main coefficient of interest is β^h that captures the responsiveness of FDI to house prices.

We complement the analysis of the sensitivity of FDI to house price growth by investigating the responsiveness of house prices to FDI. We adopt a similar framework to the one presented above, and estimate LPs as follows:

$$\Delta HP_{i,t+h} = \alpha^h_{i\times s} + \alpha^h_t + \beta^h FDI_{i,s,t} + \gamma^h \Delta W_{i,t} + \sum_{j=1}^{2} \delta_h \Delta X_{i,t-j} + \epsilon_{i,t+h} \quad for \quad h = [0, 1, ..., H] \tag{2}$$

where the response variable is $\Delta HP_{i,t+h}$ representing the change in house prices in city i at the h horizon with h= [0,1, ..., H]. The shock variable is the FDI towards city i from source country s at time t, $FDI_{i,s,t}$. Similarly to the specification above we include a set of controls, ΔW, and their lags, ΔX, that are determinants of the domestic demand and supply for housing at city level, such as population growth, unemployment rate, and income growth (Garriga, Gete and Tsouderou, 2023; Banti and Phylaktis, 2024). As key determinant of housing supply, we include the construction cost index (Oikarinen et al., 2018; Glaeser and Gyourko, 2018; Grimes and Aitken, 2010). To capture the cost of capital in the destination country, our model includes domestic real interest rates (Ball, Meen and Nygaard, 2010; Mayer and Somerville, 2000; Oikarinen et al., 2018). We also include the growth in building permits at the city level to account for the aggregate increase in the supply of housing in the city. Domestic destination country controls, such as real GDP growth and private credit to GDP are also included as controls. We include city×source country pair and time fixed effects. Similarly to above we follow Jordà, Schularick and Taylor (2015) and include 2 lags

of the independent variables, and given the timescale of construction projects, we consider horizons up to 10 years. Again, we experiment with different lag structures, and our results remain qualitatively similar. We estimate the model for the full sample period, 2003-2021. We cluster the standard error at city level. Our main coefficient of interest is β^h that captures the impact of FDI on house price growth.

3.1.1 Identification and IV approach

While foreign investments may affect house prices, the dynamics of house prices are also a key driver for foreign investments in domestic real estate. Thus, identification of the causal effect of FDI on house prices poses endogeneity challenges. As foreign companies base their investment decisions on expected future values, and house price returns are persistent, the inclusion of lags may not allow for a clear identification of the effect. In addition, there are common factors that drive both house prices and FDI, such as interest rates or economic growth.

The literature has traditionally relied on an IV approach to deal with these endogeneity concerns. The challenge of this approach is identifying an appropriate instrument that affects the variable of interest, be this demand for housing from retail, or foreign investors, while being exogenous to housing supply in our equation (1), or house prices in our equation (2) (i.e., Badarinza and Ramadorai (2018); Cvijanovic and Spaenjers (2021); Garriga, Gete and Tsouderou (2023)). We follow this literature and provide evidence of a causal link between FDI and house price growth by employing IV and 2SLS estimation of our models in equations (1) and (2).

We follow previous work on the price elasticity of housing supply (Aastveit, Albuquerque and Anundsen, 2020) and instrument house price growth in equation (1) with the growth rate in household disposable income in the cities where FDI invest. As long as the growth of personal income only affects new housing supply via their pressure on house prices, our instrument can be expected to satisfy the exogeneity condition. In our second model in equation (2), we instrument the FDI to domestic real estate with key drivers of FDI based on fundamentals of the country of origins of the foreign company. In particular, we rely on the credit conditions in the country of origins to capture the exogenous variation in FDI demand for housing as an investment. While the credit conditions in the country of origins of the foreign company are unrelated to the house price dynamics in the destination country, they affect the ability of the foreign company to invest

abroad. Moreover, as foreign investors are construction companies, we include the source country real growth in house prices as an indicator for the past performance of the sector.[4]

We report the results of the first stage of both models in Table 2. For the first stage of equation (1) in column (1), we show that house price growth is positively and significantly associated with the growth rate of household disposable income. The Kleibergen-Paap F-statistics for weak instrument test is above the conventional threshold of 10, allowing us to reject the null and confirm the relevance of the instruments. Hansen test supports the validity of our instruments, as we cannot reject the null that our instruments are uncorrelated to the error term.

We turn to the first stage of equation (2) in column (2) of Table 2. We find that FDI are positively associated with private credit growth and the growth of house prices in the source country. The Kleibergen-Paap F-statistics for weak instrument confirms the relevance of the instruments as the test stat is above the conventional threshold of 10. The Hansen test supports the validity of our instruments, as we cannot reject the null that our instruments are uncorrelated to the error term.

3.1.2 Empirical results

Figure 4a presents the estimated local projections of FDI at each horizon driven by a change in house prices in equation (1). Although FDI does not respond to changes in house prices in the very short run, FDI tend to rise after 3 years of a positive change in house prices. The effect turns insignificant after 5 years. As these are cumulative responses, our estimates indicate a foreign supply elasticity in changes at just above 1 at the (significant) 5 years horizon.

Having shown that FDI are responsive to house prices in the medium term, we then turn to examine the dynamics of house price growth to FDI. We report the local projections of house price growth in equation (2) in Figure 4b. We find that house price appreciation in the destination city tends to slow down. The effect is significant in the medium term, after 5 to 7 years after the FDI.

Overall, we show that although inelastic in the short run, the foreign supply of new housing is responsive to house price changes with a lag of 3 to 4 years. The lagged response is in line with a relatively inelastic

[4] In unreported tests, we conduct an in-depth analysis of the drivers of FDI. There we show that amongst the push factors related to macro conditions in the source country, credit conditions and house price growth are consistently associated with FDI.

housing supply in the short run (). However, foreign investments tend to move in the short to medium term in response to changes in house prices. We then turn to their effect on house price growth, to test whether they contain house price growth. Indeed, we find that house price growth tends to decline after 5 to 7 years after FDI. The lagged effect is in line with the timeline of the construction activity once the investment abroad has been announced. The negative lagged effect suggests that foreign investments in the residential real estate tend to slow down the growth in house prices in the medium term, thus significantly affecting the recipient city housing supply.

4 Robustness tests

4.1 Instrument validity

In this section we report a series of tests to support the validity and relevance of our instrument.

4.2 Panel VAR approach

In our main analysis we rely on local projections as they offer a more flexible tool to measure the impact of FDI and allow nonlinearity. In this section, we test the robustness of our results to the use of the panel VAR (PVAR) approach and then estimate orthogonalized impulse response functions (IRFs) with the Cholesky decomposition. We begin by estimating the following PVAR:

$$X_{i,t} = \beta_0 + \sum_{\tau=1}^{T} \beta_1 X_{i,t-\tau} + \beta_2 Z_{i,t-1} + \theta_i + \gamma_t + \epsilon_{i,t} \tag{3}$$

where $X = [\Delta HP \quad FDI \quad Permits]$. We order house prices first because we assume that house price dynamics affect FDI and building permits in a timely manner, as foreign (and domestic) investors respond to growing house prices. At the same time, we assume that house prices do not respond immediately to FDI and building permits, due to the timescale of construction projects. We order permits last because while FDI will result in building permits, we do not allow an immediate effect of building permits on FDI. We include 6 lags following the AIC criterion.

We report the IRFs in Figure 5. We begin by focusing on the effects of shocks to house prices. Unexpected increases in house price growth are associated with higher FDI and building permits. This indicates that

foreign investments and construction activity are encouraged by increasing house prices.

Next, we turn to the investigation on the effects of unexpected increases in FDI. By construction, shocks to FDI do not have an immediate impact on house prices. Also, house price growth does not respond to FDI shocks in the short term. However, FDIs trigger a decline in house price growth in the medium term, with a lag of 5 to 7 years. The lagged impact of FDI on house prices is consistent with the timescale of construction activity. The negative relationship suggests that the increase in the supply of housing due to the foreign investment in residential real estate is consequential for the domestic housing market dynamics. Increasing housing supply in hot housing markets, FDI reduces house price appreciation. In line with this reasoning, we find that positive shocks to FDI are associated with increasing building permits on impact, consistent with the planning of construction activity in the destination country following the foreign investment. We also show that house price growth declines after 4 lags of a positive shock in building permits, consistent with the effect of an increase in housing supply.

Overall, we confirm our main findings that FDI tend to reduce house price appreciation in the medium term due to the increase in housing supply from their construction activity.

5 Conclusion

TBA

References

Aastveit, Knut Are, Bruno Albuquerque and Andre' Anundsen. 2020. "Changing supply elasticities and regional housing booms." *Bank of England Staff Working Paper* 844.

Aizenman, Joshua and Yothin Jinjarak. 2009. "Current account patterns and national real estate markets." *Journal of Urban Economics* 66(2):75–89.

Aizenman, Joshua and Yothin Jinjarak. 2014. "Real estate valuation, current account and credit growth patterns, before and after the 2008-9 crisis." *Journal of International Money and Finance* 48:249–270.

Anderson, James E and Eric Van Wincoop. 2003. "Gravity with Gravitas: A Solution to the Border Puzzle." *The American economic review* 93(1).

Badarinza, Cristian and Tarun Ramadorai. 2018. "Home away from home? Foreign demand and London house prices." *Journal of Financial Economics* 130(3):532–555.

Ball, Michael, Geoffrey Meen and Christian Nygaard. 2010. "Housing supply price elasticities revisited: Evidence from international, national, local and company data." *Journal of Housing Economics* 19(4):255–268.

Banerjee, Ryan, Denis Gorea, Deniz Igan and Gabor Pinter. 2024. "Monetary policy and housing markets: insights using a novel measure of housing supply elasticity." *BIS Quarterly Review* Dec.

Banti, Chiara and Kate Phylaktis. 2019. "Global Liquidity, House Prices and Policy Responses." *Journal of Financial Stability* 43:79–96.

Banti, Chiara and Kate Phylaktis. 2024. "Are institutional investors the culprit of rising global house prices?" *Real Estate Economics* pp. 1–56.

Barcelona, William, Nathan Converse and Anna Wong. 2021. "U.S. Housing as a Global Safe Asset: Evidence from China Shocks." *International Finance Discussion Paper* 1332.

Christophers, Brett. 2022. "Mind the rent gap: Blackstone, housing investment and the reordering of urban rent surfaces." *Urban Studies* 59(4):698–716.

Cvijanovic, Dragana and Christophe Spaenjers. 2021. ""We'll always have Paris": Out-of-country buyers in the housing market." *Management Science* 67(7):4120–4138.

Davids, Allan. 2020. "The Cape of Good Homes: Exchange Rate Depreciations, Foreign Demand and House Prices." *Working Paper* .

DiPasquale, Denise and William C. Wheaton. 1994. "Housing Market Dynamics and the Future of Housing Prices." *Journal of Urban Economics* 35:1–27.

Duca, John V, John Muellbauer and Anthony Murphy. 2021. "What drives house price cycles? International experience and policy issues." *Journal of Economic Literature* 59(3):773–864.

Favilukis, Jack, David Kohn, Sydney C. Ludvigson and Stijin Van Nieuwerburgh. 2013. International capital flows and house prices: theory and evidence. In *Housing and the Financial Crisis*, ed. Edward L. Glaeser and Todd Sinai. University of Chicago Press pp. 235–299.

Favilukis, Jack and Stijn Van Nieuwerburgh. 2021. "Out-of-Town Home Buyers and City Welfare." *Journal of Finance* 76(5):2577–2638.

Fernández, Andrés, Michael W Klein, Alessandro Rebucci, Martin Schindler and Martín Uribe. 2015. "Capital Control Measures: A New Dataset." *IMF Working Papers* 80.

Fields, Desiree and Sabina Uffer. 2016. "The financialisation of rental housing: A comparative analysis of New York City and Berlin." *Urban Studies* 53(7):1486–1502.

Garriga, Carlos, Pedro Gete and Athena Tsouderou. 2023. "Investors and Housing Affordability." *Real Estate Economics* 51(3):533–778.

Glaeser, Edward and Joseph Gyourko. 2018. "The Economic Implications of Housing Supply." *Journal of Economic Perspectives* 32(1):3–30.

Goolsbee, Austan and Chad Syverson. 2023. "The strange and awful path of productivity in the US construction sector." *NBER Working Paper Series* 30845.

Gorback, Caitlin S. and Benjamin J. Keys. 2020. "Global capital and local assets: House prices, quantities, and elasticities." *NBER Working Papers* 27370.

Green, Richard K, Stephen Malpezzi and Stephen K Mayo. 2005. "Metropolitan-Specific Estimates of the Price Elasticity of Supply of Housing, and Their Sources." *American Economic Review* 95(2):334–339.

Grimes, Arthur and Andrew Aitken. 2010. "Housing Supply, Land Costs and Price Adjustment: Housing Supply, Land Costs and Price Adjustment." *Real Estate Economics* 38(2):325–353.

Gyourko, Joseph, Albert Saiz and Anita Summers. 2008. "A New Measure of the Local Regulatory Environment for Housing Markets: The Wharton Residential Land Use Regulatory Index." *Urban Studies* 45(3):693–729.

Harter-Dreiman, Michelle. 2004. "Drawing inferences about housing supply elasticity from house price responses to income shocks." *Journal of Urban Economics* 55(2):316–337.

Hilber, Christian A. L. and Wouter Vermeulen. 2016. "The Impact of Supply Constraints on House Prices in England." *The Economic Journal* 126(591):358–405.

Jones, Jonathan and Colin Wren. 2016. "Does Service FDI Locate Differently to Manufacturing FDI? A Regional Analysis for Great Britain." *Regional Studies* 50(12):1980–1994.

Jongrim, Ha, M. Ayhan Kose and Franziska Ohnsorge. 2023. "One-Stop Source: A Global Database of Inflation." *Journal of International Money and Finance* 137.

Jordà, Òscar. 2005. "Estimation and Inference of Impulse Responses by Local Projections." *American Economic Review* 95(1):161–182.

Jordà, Òscar, Moritz Schularick and Alan M. Taylor. 2015. "Betting the house." *Journal of International Economics* 96:S2–S18.

Lambie-Hanson, Lauren, Wenli Li and Michael Slonkosky. 2022. "Real estate investors and the U.S. housing recovery." *Real Estate Economics* 50(6):1425–1461.

Lipsey, Robert E. 1999. The Role of Foreign Direct Investment in International Capital Flows. In *International Capital Flows*, ed. Martin Feldstein. Univ. of Chicago Press pp. 307–362.

Malpezzi, Stephen and Duncan Maclennan. 2001. "The Long-Run Price Elasticity of Supply of New Residential Construction in the United States and the United Kingdom." *Journal of Housing Economics* 10(3):278–306.

Mayer, Christopher J. and C. Tsuriel Somerville. 2000. "Residential Construction: Using the Urban Growth Model to Estimate Housing Supply." *Journal of Urban Economics* 48(1):85–109.

Mayer, Thierry and Soledad Zignago. 2011. "Notes on CEPII's Distances Measures: The GeoDist Database." *CEEPII Working Paper* 25.

Oikarinen, Elias, Steven C. Bourassa, Martin Hoesli and Janne Engblom. 2018. "U.S. metropolitan house price dynamics." *Journal of Urban Economics* 105(October 2016):54–69.

Saiz, Albert. 2010. "The Geographic Determinants of Housing Supply." *Quarterly Journal of Economics* 125(3):1253–1296.

Tillmann, Peter. 2013. "Capital inflows and asset prices: Evidence from emerging Asia." *Journal of Banking and Finance* 37(3):717–729.

Appendix

Table 1A: Detailed description of FDI data

Country	Number of Cities	City names	Sample period
Australia	8	Adelaide, Brisbane, Darwin, Gold Coast (Brisbane), Melbourne, Perth, Sydney, Wollongong (Sydney)	2003-2021
Belgium	2	Aiseau-Presles, Bruxelles	2010-2021
Bulgaria	12	Arbanasi, Balchik, Bansko, Burgas, Byala, Gabrovo, Gotse Delchev, Kavarna, Razlog, Sofia, Varna, Veliko Tarnovo	2015-2021
Canada	4	Montreal, Surrey, Toronto, Vancouver	2003-2021
China	36	Anting, Beijing, Changsha (Jiangsu), Changzhou, Chengdu, Chongqing, Dalian, Guangzhou, Haikou, Hangzhou, Jiangyin (Jiangsu), Jinjiang (Fujian), Kunming, Luzhou, Nanchang, Nanjing, Nantong (Jiangsu), Ningbo, Pudong (Shanghai Municipality), Qingdao, Sanya, Shanghai, Shaoxing (Zhejiang), Shenyang, Shenzhen, Suzhou (Jiangsu), Taicang (Jiangsu), Tianjin, Wuxi, Xi'an, Xiamen, Xuzhou, Yicheng, Yixing (Jiangsu), Zhejiang, Zhuhai (Guangdong)	2006-2021
France	3	Bordeaux, Chateauroux, Paris	2003-2021
Germany	10	Aachen (Cologne), Berlin, Cologne, Dusseldorf, Frankfurt am Main, Gottingen, Graben-Neudorf, Leipzig, Mainz, Munich	2012-2021
Hong Kong	1	Hong Kong	2003-2021
Hungary	4	Budapest, Gyor, Tatabanya, Veszprem	2003 (Budapest) 2007 (others)-2021
Ireland	4	Cork, Drogheda, Dublin, Naas	2010-2021
Japan	6	Fukuoka, Kyoto, Niseko, Osaka, Tokyo, Yokohama	2009-2021
Malaysia	8	Johor Bahru, Klang, Kota Kinabalu, Kuala Lumpur, Nilai, Prai, Putrajaya, Shah Alam	2010-2021
Philippines	9	Bacolod, Cainta, Cavite, Cebu, Davao, Lipa, Manila, Quezon, Subic Bay	2016-2021
Poland	11	Gdansk, Gdynia, Jastarnia, Krakow, Lesznowola, Lodz, Poznan, Sopot, Szczecin, Warsaw, Wroclaw	2010-2021
Portugal	3	Lisbon, Loule (Algarve), Porto	2009-2021
Romania	1	Bucharest	2009-2021
Singapore	1	Singapore	2003-2021
Spain	32	Alicante, Barcelona, Benahavis, Cartagena, Cordoba, Estepona, Gava, Granada, Ibiza, Lleida, Madrid, Malaga, Marbella, Mijas Pueblo, Murcia, Oleiros, Oviedo, Palma de Mallorca, Reus, Rincon de la Victoria, Salamanca, San Roque, Sant Cugat del Valles, Sant Pere de Ribes, Seville, Tarragona, Valencia, Valladolid, Vigo, Viladecans, Vilanova i la Geltru, Zaragoza	2003-2021
Thailand	1	Bangkok	2011-2021
Turkey	2	Ankara, Istanbul	2010-2021
United Kingdom	13	Birmingham, Cardiff, Edinburgh,Glasgow, Lancaster, Leeds, Liverpool, London, Manchester, Newcastle upon Tyne, Rugby, Sheffield, York	2003-2021
United States	61	Alpharetta (GA), Angier (NC), Aurora (CO), Austin (TX), Avondale (AZ), Beverly Hills (CA), Boston (MA), Brandon (FL), Buckeye (AZ), Cedar Creek (TX), Charleston (SC), Charlotte (NC), Chicago (IL), Cranford (NJ), Dallas (TX), Dickson (TN), Dublin (CA), Elizabeth (CO), Fort Lauderdale (FL), Fredericksburg (VA), Fuquay-Varina (NC), Georgetown (TX), Goodyear (AZ), Houston (TX), Huntsville (TN), Jersey City (NJ), Katy (TX), Kissimmee (FL), Laveen (AZ), Locust Grove (VA), Los Angeles (CA), Los Lunas (NM), Louisville (KY), Maricopa (AZ), Matthews (NC), Miami (FL), Middleton (ID), Minneola (FL), Monument (CO), Morrisville (NC), Mount Dora (FL), Naples (FL), Nashville (TN), New York City (NY), Ontario (CA), Parker (CO), Phoenix (AZ), Pineville (NC), San Antonio (TX), San Francisco (CA), San Jose (CA), San Tan Valley (AZ), Seattle (WA), Surprise (AZ), Timnath (CO), Tucson (AZ), Upper Marlboro (MD), Washington (DC), Weehawken (NJ), Wesley Chapel (FL), Windsor (CO)	2003-2021

Table 2A: Detailed description of house price data

Country	City num	City names	Sample period	Variable description	Data source
Australia	8	Adelaide, Brisbane, Darwin, Gold Coast (Queensland), Melbourne, Perth, Sydney, Wollongong (NSW)	2003-2021	Median price of established house transfers	Australian Bureau of Statistics (ABS)
Belgium	2	Aiseau-Presles, Bruxelles	2010-2021	Median transaction prices	Statistics Belgium (Bel Stat)
Bulgaria	12	Arbanasi, Balchik, Bansko, Burgas, Byala, Gabrovo, Gotse Delchev, Kavarna, Razlog, Sofia, Varna, Veliko Tarnovo	2015-2021	Average transaction prices for new and existing dwellings (small regions) & House price index for large cities (Sofia, Varna, Burgas)	OECD Regional House Price Indices & National Statistical Institute of Bulgaria (Sofia, Varna, Burgas)
Canada	4	Montreal, Surrey, Toronto, Vancouver	2003-2021	Average transaction prices for new single-family dwellings (cities)	OECD Regional House Price Indices
China	36	Anting, Beijing, Changsha (Jiangsu), Changzhou, Chengdu, Chongqing, Dalian, Guangzhou, Haikou, Hangzhou, Jiangyin (Jiangsu), Jinjiang (Fujian), Kunming, Luzhou, Nanchang, Nanjing, Nantong (Jiangsu), Ningbo, Pudong (Shanghai Municipality), Qingdao, Sanya, Shanghai, Shaoxing (Zhejiang), Shenyang, Shenzhen, Suzhou (Jiangsu), Taicang (Jiangsu), Tianjin, Wuxi, Xi'an, Xiamen, Xuzhou, Yicheng, Yixing (Jiangsu), Zhejiang, Zhuhai (Guangdong)	2006-2021	Sales price indices of second-hand residential buildings (provinces)	China National Statistics
France	3	Bordeaux, Chateauroux, Paris	2003-2021	Average transaction prices for existing multifamily dwellings (cities and provincial France)	OECD Regional House Price Indices
Germany	10	Aachen (Cologne), Berlin, Cologne, Dusseldorf, Frankfurt am Main, Gottingen, Graben-Neudorf, Leipzig, Mainz, Munich	2012-2021	Average sale price of houses (single family and duplex) & Average purchase value of residential building land	empirica via Statista & Statistischen Bundesamtes
Hong Kong	1	Hong Kong	2003-2021	Average annual residential property price index	BIS
Hungary	4	Budapest, Gyor, Tatabanya, Veszprem	2003 (Budapest) 2007 (others)-2021	City house price index (Budapest) & regional mean house prices for new dwellings	Hungarian Central Statistical Office & Hypostat EU data
Ireland	4	Cork, Drogheda, Dublin, Naas	2010-2021	Average transaction prices for new and existing multifamily dwellings (small regions)	OECD Regional House Price Indices
Japan	6	Fukuoka, Kyoto, Niseko, Osaka, Tokyo, Yokohama	2009-2021	Average transaction prices for new and existing multifamily dwellings (large regions)	OECD Regional House Price Indices
Malaysia	8	Johor Bahru, Klang, Kota Kinabalu, Kuala Lumpur, Nilai, Prai, Putrajaya, Shah Alam	2010-2021	State multifamily (high-rise) house price index	National Property Information Centre (NAPIC)
Philippines	9	Bacolod, Cainta, Cavite, Cebu, Davao, Lipa, Manila, Quezon, Subic Bay	2016-2021	Residential real estate price index (condominium units) (national capital region & areas outside capital region)	Bangko Sentral Ng Pilipinas
Poland	11	Gdansk, Gdynia, Jastarnia, Krakow, Lesznowola, Lodz, Poznan, Sopot, Szczecin, Warsaw, Wroclaw	2010-2021	Average price of residential premises sold in market transactions	Statistics Poland
Portugal	3	Lisbon, Loule (Algarve), Porto	2009-2021	Transaction value of housing units	Statistics Portugal
Romania	1	Bucharest	2009-2021	Nominal House Price Index	Hypostat EU data
Singapore	1	Singapore	2003-2021	Housing and Development Board Resale Price Index	Department of Statistics Singapore
Spain	32	Alicante, Barcelona, Benahavis, Cartagena, Cordoba, Estepona, Gava, Granada, Ibiza, Lleida, Madrid, Malaga, Marbella, Mijas Pueblo, Murcia, Oleiros, Oviedo, Palma de Mallorca, Reus, Rincon de la Victoria, Salamanca, San Roque, Sant Cugat del Valles, Sant Pere de Ribes, Seville, Tarragona, Valencia, Valladolid, Vigo, Viladecans, Vilanova i la Geltru, Zaragoza	2003-2021	Autonomous Communities (regional) index - Average transaction prices for new and existing dwellings	National Statistics Institute
Thailand	1	Bangkok	2011-2021	Average transaction prices for condominium in Bangkok and vicinities	Bank of Thailand
Turkey	2	Ankara, Istanbul	2010-2021	Appraisal value of existing dwellings	OECD Regional House Price Indices
United Kingdom	13	Birmingham, Cardiff, Edinburgh,Glasgow, Lancaster, Leeds, Liverpool, London, Manchester, Newcastle upon Tyne, Rugby, Sheffield, York	2003-2021	Average transaction prices for new and existing flats and maisonettes	HM Land Registry
United States	61	Alpharetta (GA), Angier (NC), Aurora (CO), Austin (TX), Avondale (AZ), Beverly Hills (CA), Boston (MA), Brandon (FL), Buckeye (AZ), Cedar Creek (TX), Charleston (SC), Charlotte (NC), Chicago (IL), Cranford (NJ), Dallas (TX), Dickson (TN), Dublin (CA), Elizabeth (CO), Fort Lauderdale (FL), Fredericksburg (VA), Fuquay-Varina (NC), Georgetown (TX), Goodyear (AZ), Houston (TX), Huntsville (TN), Jersey City (NJ), Katy (TX), Kissimmee (FL), Laveen (AZ), Locust Grove (VA), Los Angeles (CA), Los Lunas (NM), Louisville (KY), Maricopa (AZ), Matthews (NC), Miami (FL), Middleton (ID), Minneola (FL), Monument (CO), Morrisville (NC), Mount Dora (FL), Naples (FL), Nashville (TN), New York City (NY), Ontario (CA), Parker (CO), Phoenix (AZ), Pineville (NC), San Antonio (TX), San Francisco (CA), San Jose (CA), San Tan Valley (AZ), Seattle (WA), Surprise (AZ), Timnath (CO), Tucson (AZ), Upper Marlboro (MD), Washington (DC), Weehawken (NJ), Wesley Chapel (FL), Windsor (CO)	2003-2021	Zillow Home Value Index (ZHVI) is the typical value for condo/coop (USD) in the 35th to 65th percentile range	Zillow

Notes: The table presents the data details and sources for house prices included in our analysis. House price data may be available from the listed sources for longer periods than indicated, but the sample period of our analysis begins in 2003 when the FDI data starts.

Table 3A: Detailed description of residential building permit data

Country	Number of cities	Names of cities	Sample period	Variable description	Data source
Australia	8	Adelaide, Brisbane, Darwin, Gold Coast (Queensland), Melbourne, Perth, Sydney, Wollongong (NSW)	2003-2021	Number of dwelling units by private sector (state)	Australian Bureau of Statistics
Belgium	2	Aiseau-Presles, Bruxelles	2003-2021	Number of building permits issued during the reference period for new residential dwellings	Statistics Belgium
Bulgaria	12	Arbanasi, Balchik, Bansko, Burgas, Byala, Gabrovo, Gotse Delchev, Kavarna, Razlog, Sofia, Varna, Veliko Tarnovo	2005-2021	Number of residential building permits issued for construction of new buildings by district	National Statistical Institute of Bulgaria
Canada	4	Montreal, Surrey (BC), Toronto, Vancouver	2002-2021	Number of units of building permits, by type of dwelling for census metropolitan areas	Statistics Canada
China	36	Anting, Beijing, Changsha (Jiangsu), Changzhou, Chengdu, Chongqing, Dalian, Guangzhou, Haikou, Hangzhou, Jiangyin (Jiangsu), Jinjiang (Fujian), Kunming, Luzhou, Nanchang, Nanjing, Nantong (Jiangsu), Ningbo, Pudong (Shanghai Municipality), Qingdao, Sanya, Shanghai, Shaoxing (Zhejiang), Shenyang, Shenzhen, Suzhou (Jiangsu), Taicang (Jiangsu), Tianjin, Wuxi, Xi'an, Xiamen, Xuzhou, Yicheng, Yixing (Jiangsu), Zhejiang, Zhuhai (Guangdong)	2003-2021	Floor space under construction by construction enterprises (10000 sq.m)	China National Statistics
France	3	Bordeaux, Chateauroux, Paris	2003-2021	Number of authorized housing units	Ministere de la transition ecologique et de la cohesion des territoires
Germany	10	Aachen (Cologne), Berlin, Cologne, Dusseldorf, Frankfurt am Main, Gottingen, Graben-Neudorf, Leipzig, Mainz, Munich	2015-2021	Building permits for new buildings by Länder	Statistisches Bundesamt (Destatis)
Hong Kong	1	Hong Kong	2011-2021	Number of private real estate development projects of residential buildings	Census and Statistics Department
Hungary	4	Budapest, Gyor, Tatabanya, Veszprem	2003-2021	Number of issued dwelling construction permits by county and region	Hungarian Central Statistical Office
Ireland	4	Cork, Drogheda, Dublin, Naas	2003-2021	Number of units for which planning permissions granted for new houses and apartments	Central Statistics Office
Japan	6	Fukuoka, Kyoto, Niseko, Osaka, Tokyo, Yokohama	2003-2021	Number of dwelling units for which construction started	Official Statistics of Japan
Malaysia	8	Johor Bahru, Klang, Kota Kinabalu, Kuala Lumpur, Nilai, Prai, Putrajaya, Shah Alam	2017-2021	Number of starts of residential units	National Property Information Centre (NAPIC)
Philippines	9	Bacolod, Cainta, Cavite, Cebu, Davao, Lipa, Manila, Quezon, Subic Bay	2006-2021	Construction statistics from approved building permits	Philippine Statistics Authority
Poland	11	Gdansk, Gdynia, Jastarnia, Krakow, Lesznowola, Lodz, Poznan, Sopot, Szczecin, Warsaw, Wroclaw	2010-2021	Permits granted for new private residential construction and registration with a construction project	Statistics Poland
Portugal	3	Lisbon, Loule (Algarve), Porto	2003-2021	Number of licensed dwellings in new constructions for family housing	Statistics Portugal
Romania	1	Bucharest	2003-2021	Number of residential building permits	National Institute for Statistics
Singapore	1	Singapore	2003-2021	Contracts awarded by private residential sector	Department of Statistics Singapore
Spain	32	Alicante, Barcelona, Benahavis, Cartagena, Cordoba, Estepona, Gava, Granada, Ibiza, Lleida, Madrid, Malaga, Marbella, Mijas Pueblo, Murcia, Oleiros, Oviedo, Palma de Mallorca, Reus, Rincon de la Victoria, Salamanca, San Roque, Sant Cugat del Valles, Sant Pere de Ribes, Seville, Tarragona, Valencia, Valladolid, Vigo, Viladecans, Vilanova i la Geltru, Zaragoza	2003-2021	Number of new residential dwelling permits	Spanish National Institute of Statistics
Thailand	1	Bangkok	2008-2021	Land development licences nationwide (unit)	Bank of Thailand
Turkey	2	Ankara, Istanbul	2003-2021	Number of dwelling units according to construction permits	Turkish Statistical Institute
United Kingdom	13	Birmingham, Lancaster, Leeds, Liverpool, London, Manchester, Newcastle upon Tyne, Rugby, Sheffield, York	2003-2021	District planning application statistics, Total decisions; major & minor dwellings (all)	Ministry of Housing, Communities and Local Government
		Edinburgh,Glasgow	2003-2021	Private New Build Starts	Scottish Government
		Cardiff	2003-2021	New dwellings started	Welsh Government
United States	61	Alpharetta (GA), Angier (NC), Aurora (CO), Austin (TX), Avondale (AZ), Beverly Hills (CA), Boston (MA), Brandon (FL), Buckeye (AZ), Cedar Creek (TX), Charleston (SC), Charlotte (NC), Chicago (IL), Cranford (NJ), Dallas (TX), Dickson (TN), Dublin (CA), Elizabeth (CO), Fort Lauderdale (FL), Fredericksburg (VA), Fuquay-Varina (NC), Georgetown (TX), Goodyear (AZ), Houston (TX), Huntsville (TN), Jersey City (NJ), Katy (TX), Kissimmee (FL), Laveen (AZ), Locust Grove (VA), Los Angeles (CA), Los Lunas (NM), Louisville (KY), Maricopa (AZ), Matthews (NC), Miami (FL), Middleton (ID), Minneola (FL), Monument (CO), Morrisville (NC), Mount Dora (FL), Naples (FL), Nashville (TN), New York City (NY), Ontario (CA), Parker (CO), Phoenix (AZ), Pineville (NC), San Antonio (TX), San Francisco (CA), San Jose (CA), San Tan Valley (AZ), Seattle (WA), Surprise (AZ), Timnath (CO), Tucson (AZ), Upper Marlboro (MD), Washington (DC), Weehawken (NJ), Wesley Chapel (FL), Windsor (CO)	2003-2021	New private housing structures/units authorized by building permits	U.S. Census Bureau

Notes: The table presents the data details and sources for residential building permits included in our analysis. Residential permit data may be available from the listed sources for longer periods than indicated, but the sample period of our analysis begins in 2003 when the FDI data starts.

Table 4A: Description of other control variables

Variables	Abbreviation	Data description and source
City-level data:		
Population growth	Population growth	Annual resident population of urban agglomerations from the UN database (the 2018 revision) except for some missing cities in Germany, Bulgaria, Poland, Portugal, Romania, Spain, United Kingdom, Ireland and Japan from OCED City Database, Belgium from Stat Bel, Surrey in Canada from Stat Can, China from the China Statistics, Chateauroux in France from the INSEE, for missing cities in the United States: Local Area Unemployment Statistics of the U.S. Bureau of Labor Statistics. Annual data.
Unemployment rate	Unemployment	OECD City Database, integrated with the OECD Short-Term Regional Statistics, except for: China: Unemployment rate by province from the China Statistics; Malaysia: Principal Labour Force Statistics by State of Malaysia Statistics; Philippines: Labour Force Participation Rates by Regions of the Philippines Statistics Authority; Saudi Arabia: Unemployment rate by region from the General Authority for Statistics; Singapore: Summary Table on Unemployment of the Ministry of Manpower; Thailand: Labour Force Survey from the Bank of Thailand; United States: Local Area Unemployment Statistics of the U.S. Bureau of Labor Statistics. Annual data.
Household disposable income growth	Income growth	Net disposable income per person PPP conversion at constant prices from the OECD Regions and Cities databases except for Australia: gross household disposable income per capita, Australian Bureau of Statistics, Australian National Accounts: State Accounts, Table 12. Household Income Account and Per Capita; China: Regional per capita disposable income of urban households from National Bureau of Statistics of China; Hong Kong: gross disposable income per capita from (HK$ million) from the Census and Statistics Department; Japan: Disposable income for Worker's households (yen) from the Statistics Bureau, Ministry of Internal Affairs and Communications; Malaysia: mean gross monthly household income by state; Philippines: Average Annual Family Income, by region (in thousand PhP); Singapore: Key Indicators On Household Income From Work Among Resident Employed Households, Median Monthly Household Income From Work Including Employer CPF Contributions (Dollar), from the SINGAPORE DEPARTMENT OF STATISTICS; Turkey: annual household disposable income from XXX; US: County and MSA personal income summary: per capita personal income from the Bureau of Economic Analysis; Country adjusted net national income per capita for UAE, Saudi Arabia and Thailand from the World Development Indicators of the WB. Annual data.
Country-level data:		
Real GDP growth rate	GDP growth	Percent change of the gross domestic product at constant prices from the WEO of the IMF.
Real short-term interest rates	Short-term rates	Policy interest rates from the BIS, IFS of the IMF and OECD (end-of-the-period interest rates).
Construction cost annual growth rate	CCI	Construction cost (or producer prices), new residential buildings from Eurostat except for: Australia: Producer price indexes, Table 18. Input to the House construction industry, six state capital cities, weighted average and city, percentage changes; Canada: Building construction price indexes, by type of building and division from Stat Can; China: Average construction cost of completed buildings per square meter in China between 2012 and 2022 (in yuan per square meter) from the National Bureau of Statistics of China; Hong Kong: CC index (DEC); Japan: Value of construction work completed (Original contracts) in million yen; Malaysia: Table 18.1: Principal Statistics of Construction Industries, Value of work done and percentage share by sub-sector residential buildings; Mexico: Series desestacionalizadas del valor total de producción en términos reales generado por las empresas constructoras según tipo de obra from INEGI; Philippines: Construction Materials Wholesale Price Index from the Philippine Statistics Authority (PSA); Saudi Arabia: The annual average rate of change for some construction products from SAMA; Singapore: Table Title: Construction Material Market Prices from the Building and Construction Authority; Thailand: Construction Materials Price Index by Commodity Group from the Bureau of Trade and Economic Indices Trade Policy and Strategy Office Ministry of Commerce; UAE: Quarterly percentage change in Construction Cost Index By Economic Activity; UK: construction output price index, Table 1: All construction output prices, not seasonally adjusted, index numbers and percentage change from the ONS; US: Price Deflator(Fisher) Index of Multifamily Residential Units Under Construction from US Census. Annual data.
Producer price index	PPI	A Cross-Country Database of Inflation, Jongrim, Kose and Ohnsorge (2023), World Bank.

Table 1: Descriptive statistics

Variable	Obs	Mean	St dev	Min	Max
Local housing market					
House price growth (%)	5,330	0.64	7.93	-49.31	36.48
FDI (number of projects)	5,330	0.10	0.41	0	8.00
FDI (USD mln)	5,330	18.68	201.37	0	12652
Building permits growth (%)	5,330	0.06	0.24	-1.24	1.52
City-level					
Population growth (%)	5,330	1.30	1.76	-37.82	32.72
Unemployment (%)	5,330	7.66	6.66	0.79	37.05
Income growth (%)	5,330	3.54	4.95	-21.29	20.86
Country-level					
GDP growth (%)	5,330	3.02	4.10	-11.17	24.48
Short-term rates (%)	5,330	1.88	2.16	-0.55	20.66
Private credit (%GDP, index)	5,330	153.47	50.17	24.62	383.58
CCI (%)	5,330	4.56	6.20	-25.78	42.29
PPI (%)	5,330	1.93	4.63	-13.45	43.86
Distance (kilometers)	5,330	4,510.46	4,112.72	173.52	17,011.27
Same region (0-1)	5,330	0.64	0.48	0	1
Capital controls (0-1)	4,442	0.31	0.35	0	1
Ease of doing business - construction	3,895	70.91	12.78	29.93	93.47

Notes: Descriptive statistics of the variables in our models. House prices are annual percentage changes in the house price index. FDI are number of projects and dollar capital expenditures by foreign investors in domestic residential real estate. Building permits are the percentage change of the number of residential building permits issued. Population growth is the percentage change in the city total population. Unemployment is the city unemployment rate. Income growth is the percentage change in household disposable income in the city. GDP growth is the real GDP growth. Short-term rates are real policy rates in %. Private credit is the credit to the private sector as % of GDP. CCI and PPI are the annual construction cost and producer price inflation rate in %. Distance is the great circle geographical distance between the distance and source FDI countries (Mayer and Zignago, 2011). Same region is a dummy taking value 1 when the destination and source FDI country are in the same geographical region, and 0 otherwise. Capital controls is a measure of the restrictions on the capital account (Fernández et al., 2015). Ease of doing business is an index of the regulatory stringency in the construction sector from the Ease of Doing Business reports from the World Bank. Sample period is 2003-2021.

Table 2: First stage

Dependent variable:	(1) *House price growth*	(2) *FDI*
(Lagged) income growth (city)	0.3680***	
	(0.0412)	
(2 Lags) income growth (city)	0.0178	
	(0.0546)	
(Lagged) private credit growth (source)		0.0026**
		(0.0013)
(2 Lags) private credit growth (source)		0.0031**
		(0.0013)
(Lagged) house price growth(source)		0.0031**
		(0.0013)
(2 Lags) house price growth(source)		0.00003
		(0.0011)
Controls	Yes	Yes
City × source FE	Yes	Yes
Time FE	Yes	Yes
First stage F stat	21.383	12.19
Hansen J stat (p-value)	0.6038	0.1593
Cities	227	227
Obs	5530	5530

Notes: The table reports the results of the first stages of the IV estimation of equation (1) in column (1) and equation (2) in column (2). In column (1), the dependent variable is the house price growth in city i. The instrument is the growth rate of household disposable income. In column (2), the dependent variable is $FDI_{i,s}$, the capital expenditures in residential real estate projects in the domestic city i from a foreign firm from source country s. The instruments are the credit conditions in the source country as measured by the growth in private credit and the performance of the real estate sector in the source country as measured by the growth rate of house prices. Other variables included in the models are: City-level controls such as building permit growth, population growth, and unemployment rate; Country-level controls such as domestic short-term real interest rates, real GDP growth, domestic private credit, and the construction costs growth rate. 2 lags of instruments and controls are included. The models include city×source country and time fixed effects. Clustered standard errors at city level are reported below the coefficients. First stage Kleibergen-Paap weak-identification F statistic and p-values for the Hansen over-identification J statistics are reported below the estimations. Significance of the coefficients is reported as ***, **, and * for 1%, 5%, and 10% respectively. The sample period is 2003-2021.

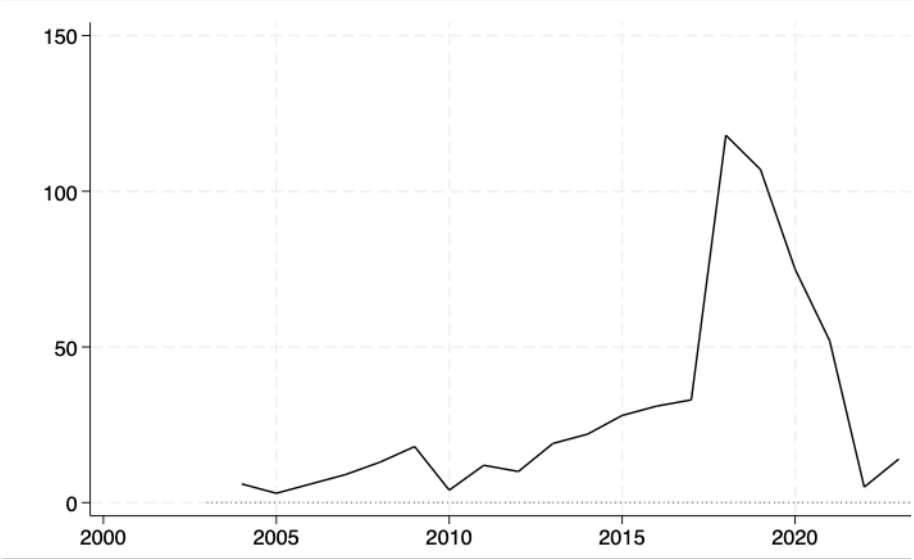


Figure 1: Residential real estate FDI. Aggregate number of residential real estate projects by foreign companies in the cities in our sample including 227 cities in 22 countries. Data is from fDi Markets.

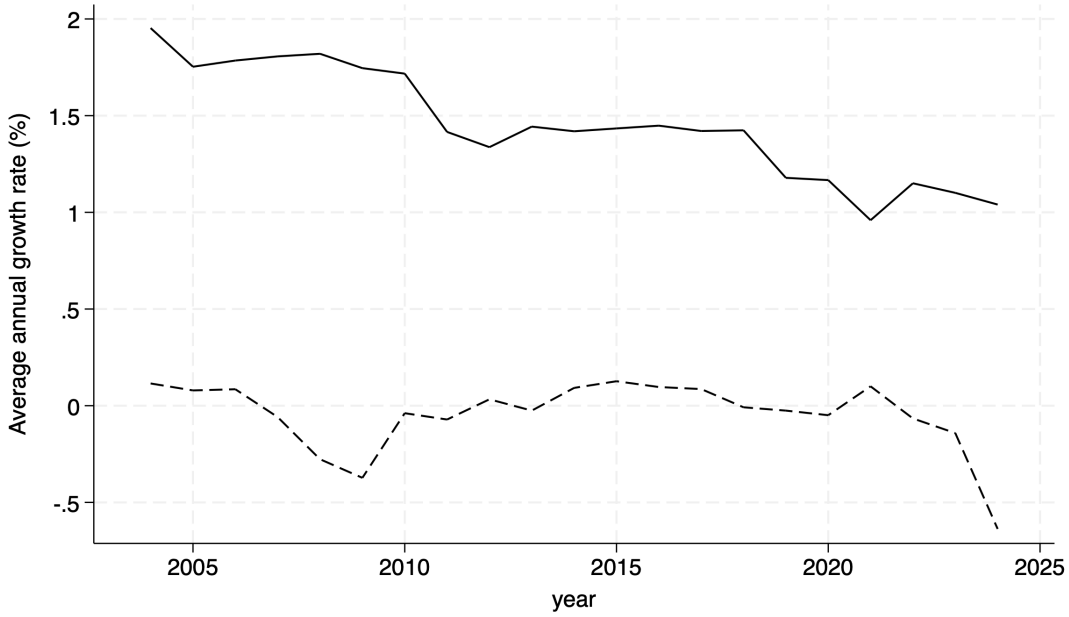
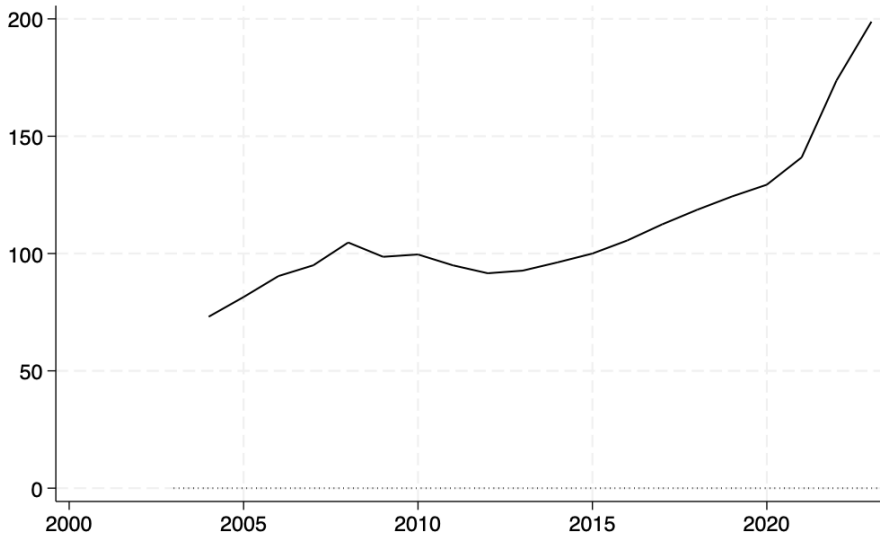


Figure 2: Dynamics of annual average growth rate in city resident population (solid line) and building permits (dashed line). The figure shows the average annual growth rate of the resident population and building permits in the cities in our sample. Details on the sources are reported in Tables 3A and 4A.

(a) Nominal house prices



(b) Growth in house prices vs growth in building permits

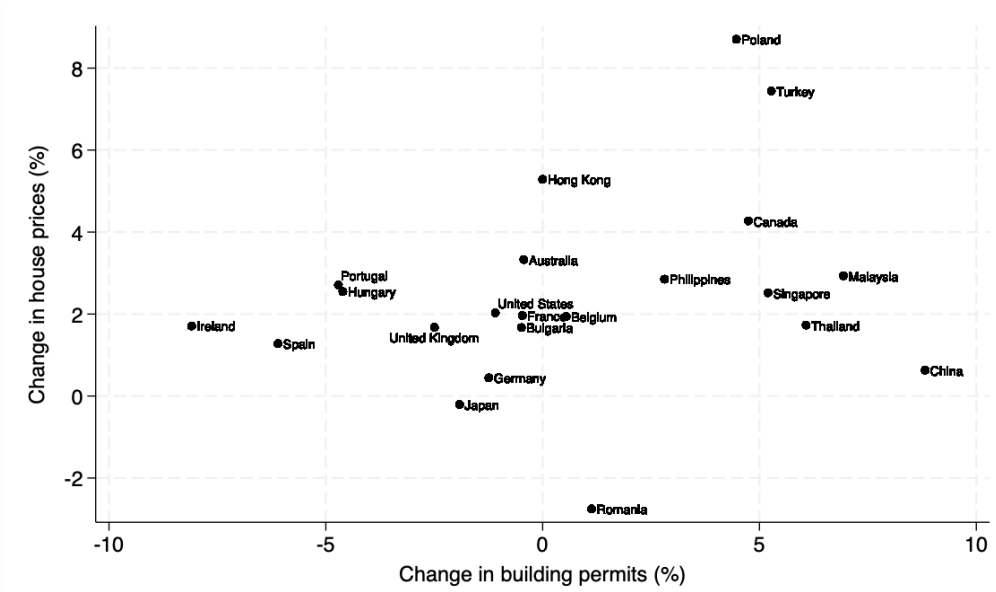
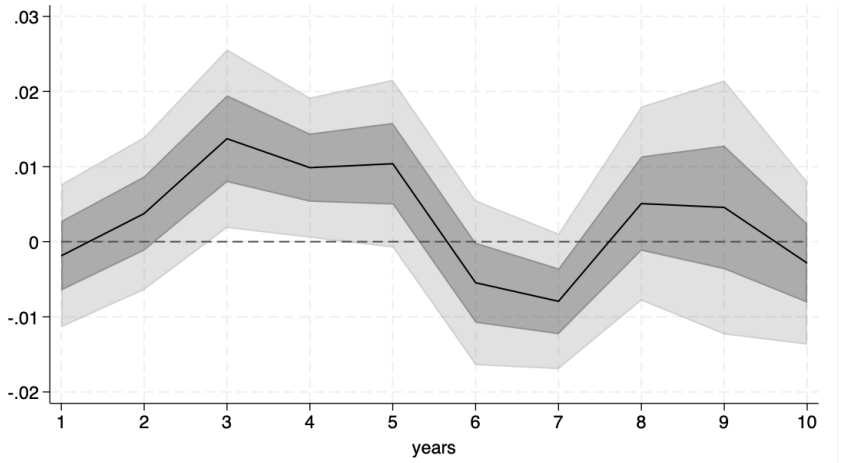


Figure 3: House prices and housing supply. Panel a shows the average nominal house prices over the cities in each country in our sample. Panel b shows real house price changes versus the growth rate of building permits averaged over the cities in each country in our sample. House price data is from the OECD Regional House Price database and national sources (see Table 2A in the Appendix for details). Building permits are from national sources (see Table 3A for details).

(a) Response of FDI to house prices



(b) Response of house price growth to FDI

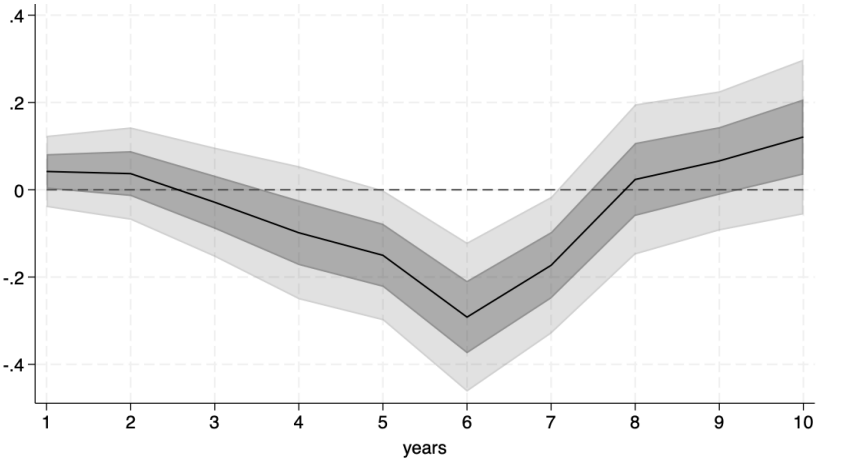


Figure 4: Local projections. The plot reports the local projections at horizons up to 10 years. Panel (a) reports the responses at each horizon of FDI to changes in house prices at time 0, estimated in equation (1). Instrumental variable is the growth in household disposable income in the destination city. Exogenous controls include city building permits growth, city population growth, city unemployment rate, national GDP growth, short-term rates, private credit growth, and construction cost index. Panel (b) reports the responses at each horizon of house price growth to FDI, estimated in equation (2). Instrumental variable are the growth in private credit and house price growth in the source country. Exogenous controls include city building permits growth, city population growth, city household disposable income growth, city unemployment rate, national GDP growth, short-term rates, private credit growth, and construction cost index. 2 lags of instruments and controls are included in all models. The models also includes city-source country pair and time fixed effects. Standard errors are clustered at city level. The plot reports the confidence bands around the estimates at 66% (grey) and 95% (light grey) levels.

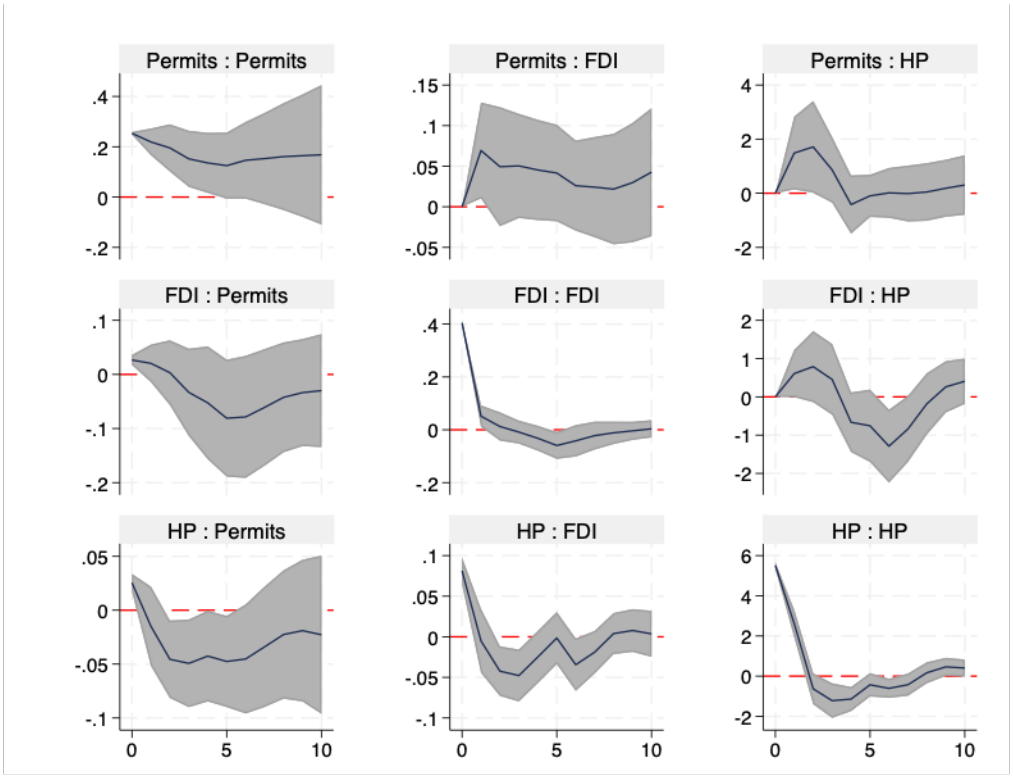


Figure 5: Impulse response functions. The plots report the IRFs of the PVAR of house price growth, FDI, and building permits. Exogenous controls include population growth, income growth, unemployment rate, GDP growth, short-term rates, private credit growth, and construction cost index. The models include pair and time fixed effects.