

# Financial lessons from the long history of housing markets

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## Chapter 8

# Summary of Findings

Inspired by the challenges faced by modern housing markets, the chapters of this dissertation exploit the long course of history to create a better understanding of the dynamics in modern housing markets. The first set of studies does so by obtaining and analyzing new data on the evolution of housing rents (Chapter 2), affordability (Chapter 3), and housing returns (Chapter 4). The second set of studies uses specific episodes in history to study phenomena that are hard to understand on the basis of modern, shorter-term data (Chapters 5 to 7). In this section, I will briefly summarize the results of each of these studies.

Chapters 2 and 3 combine the investor and tenant perspective on housing to study one of the most significant challenges in urban housing markets: the development of housing rents and their affordability in large cities around the world. Chapter 2 focuses on the evolution of housing rents as income to investors. Based on a dataset of 436,000 rent observations covering rents in seven cities; Amsterdam, Antwerp, Bruges, Brussels, Ghent, London, and Paris, we present new indices of housing rents dating back to 1500. Long-term growth in real rental prices has been limited but has differed substantially across cities. While modern global cities like Paris and London experienced substantial real rental price growth of 0.3% per year, cities such as Ghent and Bruges, which lost their important status, did not experience long-term real rental price growth for half a millennium. Focusing on returns of high-growth cities thus provides biased estimates of future rental returns.

Chapter 3 analyzes these issues from the perspective of a tenant and studies the long-term development of housing affordability, housing quality, and housing inequality. In the period before 1900, we show that markets were unregulated and that rent prices and wages rose in tandem when cities grew, while housing quality and inequality increased. After 1900, housing affordability started improving substantially, and we show that short-term improvements in this period were partially attributable to rent controls. Most of the surge in housing expenditure that did occur over time is due to increasing housing quality rather than rising rent. In the past decades, urban housing has been more affordable than at any other time in history.

Chapter 4 retakes a pure investor perspective and provides the first evidence of the

actual rate of return and risk to residential real estate, both at the aggregate level and at the property level. It employs hand-collected archival data for Paris (1809–1942) and Amsterdam (1900–1979), combining microdata on rents, transaction prices, and assessed values for the same homes, as well as information about property-level taxes and costs. In all, this amounted to over 170,000 observations of rents, prices, or taxes, covering about 40,000 properties. Over the period of study, the real geometric total return to housing, net of costs and taxes, was 4.0 percent per year for Paris and 4.8 percent for Amsterdam. All real long-term total returns originate from net rental yields. At the property-level, the yield at purchase is an essential determinant of the total gross holding period return, even for longer holding periods. In the short-term, idiosyncratic risk is the dominant component of total risk, but this reduces to about 50 percent for holding periods of up to 20 years.

Rather than focusing on risk and return only, Chapter 5 investigates the impact of investor demand on house prices, specifically focusing on whether investors ‘reach for yield’ when interest rates are low. This chapter exploits the setting of 17<sup>th</sup>-18<sup>th</sup> century Amsterdam, using newly-collected archival data on 164,067 property transactions and 25,962 investment portfolios. In this period, Holland was often drawn into expensive warfare abroad. Wars were uncorrelated to the Amsterdam economy, but exogenously increased the supply of Holland bonds, which investors bought for a stable income. These shocks caused large booms and busts in house prices, while bond yields only changed by small amounts. Housing cycles were amplified because wealthy investors reached for yield, actively purchasing higher-yielding assets in periods of peace when interest rates declined. For the top 1% of society, a 1% reduction in bond yields increased the share of wealth in real estate by 12%. This reach for yield reduced risk premia and resulted in a persistent increase in housing wealth inequality.

Chapter 6 studies how population aging and urbanization affect housing markets. This chapter exploits historical demographic shocks to identify the causal effect of urban demographic change on housing costs, building on half a millennium of data on house prices, rents, and demographics from Paris and Amsterdam. We show that a one percentage point increase in the current five-year birth rate increases house prices about 25 years later by 5%, but reduces prices 60-65 years later by the same amount. These changes are primarily driven by the age-dependent demand for housing as investment asset: we find large impacts of demographic structure on rental yields, but smaller and less significant impacts on bond yields and rent prices.

Chapter 7 studies how housing markets respond to the outbreak of major epidemics. It answers this question by analyzing unique transaction and mortality data around historical outbreaks of the plague in Amsterdam and cholera in Paris. We document that these outbreaks had a significant negative impact on house prices, but a smaller impact on rent prices. We find particularly large reductions in house prices during the first six months of an epidemic, as well as in heavily-affected areas. However, these price shocks were only transitory, and both cities quickly reverted to their initial price paths. Our findings suggest that urban housing markets are very resilient to major shocks originating from pandemics, even if they result in a substantial number of deaths.