

## [Housing Bubbles with Phase Transitions](#)

CFM-DP2026-01

Tomohiro Hirano<sup>2</sup> and Alexis Akira Toda<sup>1</sup>

<sup>1</sup>Emory University, <sup>2</sup>Royal Holloway, University of London

Over the last three decades, many countries have experienced appreciation in housing prices, with upward trends in the price-rent ratio. The situation is often referred to in the popular press as a housing bubble. Because fluctuations in housing prices have often been associated with macroeconomic problems, many academics and policymakers want to understand why and how housing bubbles emerge in the first place. However, the mechanism of the emergence of housing bubbles is poorly understood. In addition, theoretically, it is well known that there is a fundamental difficulty in generating asset price bubbles (existence of speculation) in dividend-paying assets such as housing, land, and stocks. The theory of bubbles attached to real assets remains largely underdeveloped: at present, there is no theoretical framework for considering whether housing prices reflect fundamentals or contain bubbles.

The primary purpose of this paper is to fill this gap and to present a theory of rational housing bubbles. We are interested in the following questions. What is the mechanism by which equilibrium housing prices can or must be disconnected from fundamentals in the long term, exhibiting a speculative bubble in a dynamic general equilibrium setting in which housing rents and prices are both endogenously determined? How is the disconnection related to economic conditions, such as the income or access to credit of home buyers, and to the formation of expectations about future economic conditions, namely the process of economic development? What are the welfare properties of equilibria?

To address these questions, we theoretically analyze how equilibrium housing prices are determined along with economic development in an overlapping generations model with perfect housing and rental markets. We characterize the rent growth rate in all equilibria. The economy exhibits a two-stage phase transition: as home buyers' income rises, the equilibrium regime shifts from fundamental to bubble possibility, where fundamental and bubbly equilibria coexist. With even higher incomes, fundamental equilibria disappear, and housing bubbles become a necessity. We also discuss extensions and refinements such as equilibrium uniqueness, multiple savings vehicles, welfare implications, credit- and expectation-driven bubbles, and testable implications of our theory.