Housing Dynamics Theory Behind Empirics

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To fill the knowledge gap that previous studies ignore either housing or internal urban structure and to enable better fit with important stylized facts, we construct a two-sector optimal growth model of housing where housing is produced by land and housing structure/household durables. We explicitly model within-city locational choice. Housing services derive positive utility but are decayed away from the city center. Our model enables a full characterization of the dynamic paths of housing and housing and land prices. The model is then calibrated to fit part of the stylized facts: faster growth of housing structure/household durables than housing, faster growth of land prices than housing prices, and downward housing price and land rent gradients within a city. The calibrated model can then be used to predict the remaining untargeted part of stylized facts: a locationally steeper land rent gradient than the housing price gradient, relatively flatter housing quantity and price gradients in larger cities with flatter population gradients and moderate rise in the housing expenditure share. The calibrated model can be further used to yield additional insights on housing dynamics and spatial distribution. We find nonhomotheticities in housing preference and housing production are crucial for realistic model predictions.