ABFER 2022

Discussion of the paper:

Rural-Urban Migration, Structural Transformation, and Housing Markets in China.

By C. Garriga, A. Hedlund, Y. Tang, and P. Wang

Fu Yuming

Department of Real Estate, NUS

The objectives and key features of the model

- Objectives: incorporating an urban housing asset in a stylized dynamic model of rural-urban migration and structural transformation.
  - To examine how housing market and policies—urban hukou policy, housing credit policy, and land supply policy—hinder or support the structural transformation
- Model features:
  - Two productive sectors: rural and urban, with exogenous TFP trends in each sector, employs labor but not capital or land.
  - Rural-urban migration is regulated by a heterogenous mobility cost across rural households and a growing urban quality (diminishing mobility cost trend).
  - Urban features
    - Stochastic labor endowment → mean reversing income dispersion, thus housing tenure diversity
    - Urban housing services are produced by housing (capital) stock, which in turn is produced by land, capital, and labor.
    - Owner-occupiers have a larger choice set of housing service levels and enjoy a housing utility premium
    - Housing tenure choice is regulated by urban residential permits, or hukou

The application of the model

- Calibrating the model to Chinese data to reconstruct structural changes:
  - Exogenous input: (1) Manufacturing TFP changes, (2) Agricultural TFP changes, (3) Agricultural prices (relative to manufacturing prices), (4) urban residential land supply, (5) urban amenity changes, and (6) the distribution of rural-urban mobility cost
  - Endogenous output: housing price changes
- Use the model to performance counterfactual policy experimentations
  - The impact of structural changes on housing prices: (1) income shock, and (2) rural-urban mobility shock
  - The impact of housing market on structural changes: (1) perfectly elastic housing supply (constant housing price), (2) accelerating urban hukou permits, (3) a permanent loosening / tightening of housing credit (down payment requirement), and (4) expansion of land supply / endogenous land supply

Questions about land price and land supply

- Profit maximizing land input?

$$p_{ljt} = p_{jt} Z_j \frac{\partial F_j}{\partial L_j}, \tag{1}$$

  - Is land an homogeneous input?
  - If land supply is regulated, then profit maximization with respect to land input doesn't hold.
    - Instead, competitive home producers will maximize profit with respect to S and N
    - The land price is the residual and equals the maximum profit.
  - If land supply is endogenous (elastic), then the monopoly landowner (the government) would maximize profit by equalizing the marginal cost of new land supply with the marginal revenue of new land supply
  - In a dynamic setting, the monopoly landowner will also attempt to maximize the real option value of land: thus land supply for new development would demand on the stochastic process of future rural-urban migration and urban income growth.
- Land supply shocks
  - How to measure new land supply? Different uses, different locations, and different density (plot ratio) regulations?
- Possibility of redeveloping existing land stock to higher housing density?

Questions about dynamic equilibrium and housing asset prices

- The critical prices that determines the dynamic equilibrium are housing prices—the prices for the rental and owner-occupying housing stocks.
- These asset prices should be forward looking, i.e., should be a function of all future demand and supply conditions.
  - In other words, these housing asset prices should be a function of all future TFP shocks, urban amenity shocks, land-supply shocks, Hukou policy shocks, housing credit policy shocks, and urban labor endowment shocks.
  - In other words, to determine the housing prices in any period, the stochastic processes of all above exogenous variables have to be simulated and all the endogenous variables (migration and housing choices) have to be solved using dynamic programming algorithms.
    - Housing prices should also depend on risks (the variance of future TFP shocks and policy uncertainties)
  - Currently, the forward-looking asset pricing is not fully specified
    - Are housing prices fixed by exogenous land prices?

Questions about household decision problems

- The household decision problems are in fact more complicated than what are described in the paper.
  - Currently the diversity of housing tenure and tenure transition in the city are driven by the stochastic labor endowment $e_t s_t$.
  - In fact, households are also heterogeneous with respect to their migration cost ϵ and should be indexed by ϵ:
    - Each ϵ value corresponds to a unique rural-urban migration time and, hence, a unique set of housing investment opportunities and wealth accumulation paths.
    - In other words, housing choices and household value functions should be jointly determined by ϵ value and $e_t s_t$ experiences.

Questions about counterfactual housing / land supply

- Implications of perfectly elastic housing supply
  - Even if land supply is perfectly elastic, labor supply for housing capital and housing construction is not perfectly elastic:
    - Labor supply is imperfectly elastic in each period
    - Labor cost increases with manufacturing TFP
- Endogenous land supply, Eq 25
  - Shouldn't the land supply cost also depend on the existing stock of urban land use?
    - Marginal land is less accessible
  - A monopoly landowner would face an imperfectly elastic land demand → need to specify the demand elasticity
  - In a dynamic setting the monopoly landowner should maximize the real option value of land

Ramifications of many modeling assumptions

- Improving urban quality, or diminishing ξ_t, boosts rural-urban migration. Shouldn't ξ_t also boosts the utility of urban residents?
- Farming is land intensive and manufacturing is capital intensive. Implications of omitting these factor input requirements?
- Credit cost and the return on saving are assumed to be exogenous. But the saving and borrowing must be equalized to clear the credit market.
- No budget constraint for government (land) revenue and expenditure (transfer payment, land cost?)
- Allowing absentee landlords and government budget surplus means that rising home prices are leakages to the aggregate demand in the economy.

The impact of policy interventions—intuitions

- Interventions that boost housing demand of urban residents—accelerating hukou permissions or loosening housing credit—reduce the rate of rural-urban migration and raise housing prices.
- Interventions that boost housing supply in the city—increasing land supply or making land supply more elastic—accelerate rural-urban migration and reduce housing prices.

- Can these intuitions be captured by a simpler model?

Typos

- In the budget equations (7) and (8), p_a should be replaced by r_a?