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

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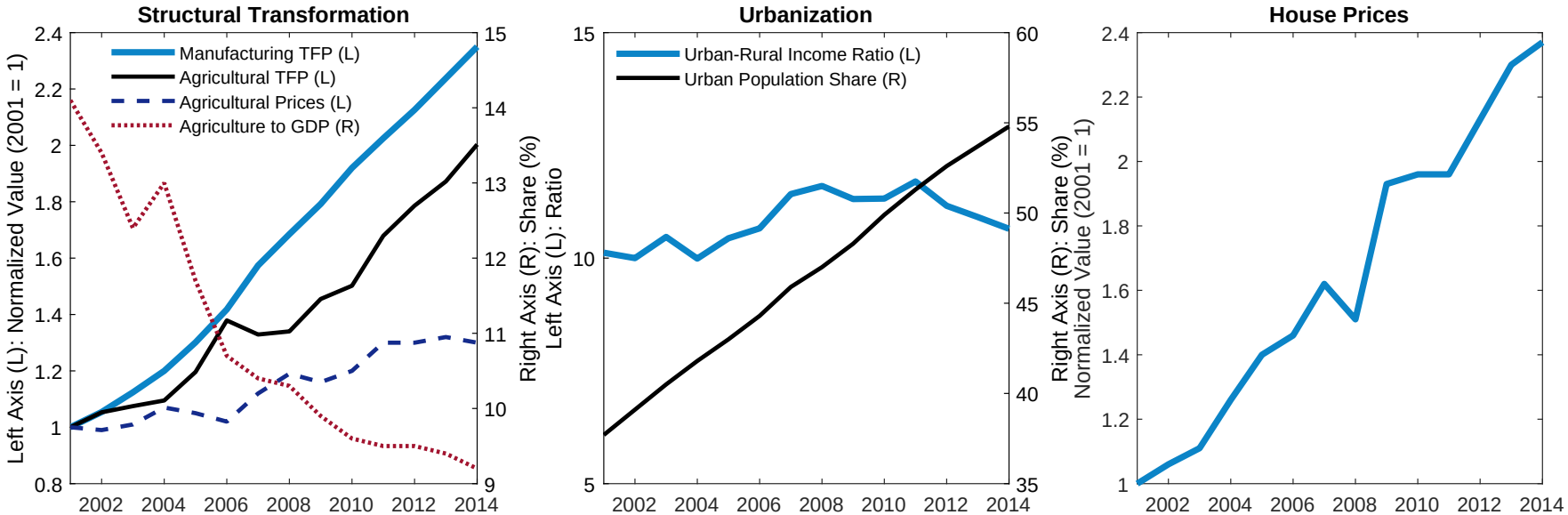
ABFER, May 23, 2022

LONGER TERM AGENDA

1. **What drives housing (especially prices)?**
   - Fundamentals (demographics, preferences, structural transformation/urbanization in modern economies).
   - Expectations
   - Credit (mortgage, downpayment).
   - market incompleteness, market imperfections, market frictions
2. **How does housing impact the macroeconomy?**
3. **What are the policy implications?**

MOTIVATING FACTS

- Substantial decline in the agriculture-to-GDP share driven primarily by sectoral reallocation.
- Sizable rural-urban migration but stable income gap.
  - Suggests other forces must be at play.
- Large and persistent house price boom.



TODAY'S TALK

Explore the links between China's **economic transition** and its **housing boom** from 2001-14.

1. **To what extent can structural transformation and urbanization rationalize the Chinese housing boom?**
   - Rising productivity boosts income and housing demand.
   - Rural-urban migration further increases housing demand. (migration accelerator)
   - Constrained land supply limits construction.
2. **How do rising housing costs affect the extent and speed of structural transformation?**
   - Expensive urban housing is a deterrent to migration. (house price decelerator)
3. **What is the impact of land and permitting policies?**
   - Land supply affects house prices and possibly migration.
   - Hukou permits slow the transition from renting to owning.
   - Downpayment (credit constraint) reduces affordability to purchase.

LITERATURE

- China houisng: Wu-Gyourko-Deng (2016), **Chen-Wen (2017)**
- China migration: Ngai-Pissaridis-Wang (2019), Liao-Wang-Wang-Yip (2020)
- Structural transformation and urbanization: **Lucas (2004)**, Bond-Riezman-Wang (2016), **Deng-Tang-Wang-Wu (2020)**
- Dynamic GE Housing: Davis-Heathcote (2005), Piazzesi-Schneider (2016), Favilukis-Ludvigson-Nieuwerburgh (2017), **Garriga-Hedlund (2018)**

MODEL SUMMARY: I

All Households

- Utility $u(x_{ft}, x_{mt}, x_{ht})$.

Rural Households

- Deterministic, inelastic agricultural income.
- Agents live in farm houses at zero cost: $x_{ht} = h_f$.
- No access to financial markets.

Urban Households

- Stochastic income $w_t e_t s_t$: $\int e_t s_t d\Phi_t^{urban} = \mu_t^{urban}$.
- Rent $x_{ht} = h_a$ at flow cost p_{at}.
- Hukou permit holders can buy $h \in \mathcal{H} = \{h_1, h_2\}$ at price p_{ht} and receive $x_{ht} = \zeta h$. Adjustment costs τ_b and τ_s.
- Access to saving (all) and borrowing (homeowners only).

MODEL SUMMARY: II

Migration

- Rural workers differentiated by mobility cost $\epsilon \sim \Psi(\epsilon)$. The net migration cost $\xi_t \epsilon$, where ξ_t is a common, time-varying component.
- Urban households draw stochastic labor earnings e_t and $s_t \sim \Pi_s$. No reverse migration.
- $\mu_t^{rural} = \mu_{t-1}^{rural} - \text{migration}_{rural \to urban, t}$; $\mu_t^{rural} + \mu_t^{urban} = 1$.

Technology

- Agriculture: $Y_{ft} = Z_{ft} N_{ft}$ where $N_{ft} = \mu_t^{rural}$.
- "Manufacturing:" $Y_{mt} = Z_{mt} N_{mt}$.
- The residential construction sector produces tenant-occupied apartments ($j = a$) and owner-occupied housing ($j = h$) using $Y_{jt} = Z_j F_j(L_{jt}, \Upsilon(S_{jt}, N_{jt}))$.
- Absentee rental companies lease apartments to urban residents at rent r_{at}. The following relationship between apartment prices and rents holds $p_{at} = r_{at} + \frac{1-\delta_a}{1+i_{t+1}} p_{a,t+1}$.

MODEL SUMMARY: III

Financial Markets

- Risk-free saving at rate i_t.
- Long-term mortgages with rate r_t that amortize at rate γ.
  - Maximum loan-to-value (LTV) at origination of θ.
  - No default, no refinancing.

Goods Market

- Tradable goods and financial services (open economy); nontradable housing.
- Exogenous i_t, r_t, p_{ft}; endogenous p_{at}, w_t, p_{ht}.

HOUSEHOLD DECISION PROBLEMS

- Rural households:

$$
\begin{aligned}
V_t^{rural}(\epsilon) = \max_{x_f, x_m} u\left(x_{ft}, x_{mt}, h_f\right) \quad &+ \quad \beta \max\left\{V_{t+1}^{rural}(\epsilon), EV_{t+1}^{rent}(y_{t+1}, s_{t+1}) - \xi_{t+1}\epsilon\right\} \\
\text{s.t} \quad p_{ft}x_{ft} + x_{mt} &= p_{ft}Z_{ft} \\
y_{t+1} &= e_{t+1}s_{t+1}w_{t+1} + \mathcal{T}_{t+1}
\end{aligned}
$$

- Urban renters without hukou permits:

$$
\begin{aligned}
V_t^{rent,0}(y_t, s_t) &= \max_{x_m, x_f, b_{t+1}} u\left(x_{ft}, x_{mt}, h_a\right) \\
&+ \beta \mathbb{E}\left[\begin{array}{c} \eta_t \max\{V_{t+1}^{rent,1}(y_{t+1}, s_{t+1}), V_{t+1}^{buy}(y_{t+1}, s_{t+1})\} \\ +(1-\eta_t)V_{t+1}^{rent,0}(y_{t+1}, s_{t+1}) \end{array}\right] \\
\text{s.t.} \quad & p_{ft}x_{ft} + x_{mt} + p_{at}h_{at} + b_{t+1} = y_t \\
y_{t+1} &= e_{t+1}s_{t+1}w_{t+1} + (1+i_{t+1})\,b_{t+1} + \mathcal{T}_{t+1}
\end{aligned}
$$

where the probability to obtain hukou permit is η.

HOUSEHOLD DECISION PROBLEMS

- Urban renters with hukou permits:

$$
\begin{aligned}
V_t^{rent,1}(y_t, s_t) &= \max_{x_m, x_f, b_{t+1}} u\left(x_{ft}, x_{mt}, h_a\right) \\
&+ \beta \mathbb{E}\left[\max\{V_{t+1}^{rent,1}(y_{t+1}, s_{t+1}), V_{t+1}^{buy}(y_{t+1}, s_{t+1})\}\right] \\
\text{s.t.} \quad p_{ft}x_{ft} + x_{mt} &+ p_{at}h_{at} + b_{t+1} = y_t \\
y_{t+1} &= e_{t+1}s_{t+1}w_{t+1} + (1 + i_{t+1})\, b_{t+1} + \mathcal{T}_{t+1}
\end{aligned}
$$

- Buyers:

$$
\begin{aligned}
V_t^{buy}(y_t, s_t) &= \max_{x_m, x_f, b_{t+1}, d_{t+1}, h_{t+1}} u\left(x_{ft}, x_{mt}, \varsigma h_{t+1}\right) \\
&+ \beta \mathbb{E}\left[\begin{array}{c} \max\left\{(1-\rho) V_{t+1}^{rent,0}\left(y_{t+1}^{rent}, s_{t+1}\right) + \rho V_{t+1}^{rent,1}\left(y_{t+1}^{rent}, s_{t+1}\right), \right. \\ \left. V_{t+1}^{own}\left(y_{t+1}^{own}, h_{t+1}, d_{t+1}, s_{t+1}\right)\right\} \end{array}\right] \\
\text{s.t.} \quad p_{ft}x_{ft} &+ x_{mt} + (1 + \tau_b + \delta_h)\, p_{ht}h_t + b_{t+1} = y_t + d_{t+1} \\
y_{t+1}^{rent} &= e_{t+1}s_{t+1}w_{t+1} + (1 + i_{t+1})\, b_{t+1} + (1 - \tau_s)\, p_{h,t+1}h_{t+1} \\
&- (1 + r_{t+1})\, d_{t+1} + \mathcal{T}_{t+1} \\
y_{t+1}^{own} &= e_{t+1}s_{t+1}w_{t+1} + (1 + i_{t+1})\, b_{t+1} \\
d_{t+1} &\leq (1 - \theta_t)\, p_{ht}h_{t+1}
\end{aligned}
$$

where the probability to retain the hukou permit when selling a house is ρ.

HOUSEHOLD DECISION PROBLEMS

- Owners:

$$
\begin{aligned}
V_t^{own}\left(y_t, h, d_t, s_t\right) &= \max_{x_m, x_f, b_{t+1}} u\left(x_{ft}, x_{mt}, \varsigma h\right) \\
&+ \beta \mathbb{E}\left[\begin{array}{r} \max\left\{(1-\rho) V_{t+1}^{rent,0}\left(y_{t+1}^{rent}, s_{t+1}\right) + \rho V_{t+1}^{rent,1}\left(y_{t+1}^{rent}, s_{t+1}\right), \right. \\ \left. V_{t+1}^{own}\left(y_{t+1}^{own}, h, d_{t+1}, s_{t+1}\right)\right\} \end{array}\right] \\
\text{s.t.} \quad p_{ft} x_{ft} &+ x_{mt} + \delta_h p_{ht} h_t + (\gamma + r_t) d_t + b_{t+1} = y_t \\
y_{t+1}^{rent} &= e_{t+1} s_{t+1} w_{t+1} + (1 + i_{t+1}) b_{t+1} + (1 - \tau_s) p_{h,t+1} h \\
&- (1 + r_{t+1}) d_{t+1} + \mathcal{T}_{t+1} \\
y_{t+1}^{own} &= e_{t+1} s_{t+1} w_{t+1} + (1 + i_{t+1}) b_{t+1} \\
d_{t+1} &= (1 - \gamma) d_t
\end{aligned}
$$

where owner's state h appears in BC instead of h_{t+1} in buyer's problem.

GOVERNMENT

- The government exogenously issues quantities $\overline{L}_{jt}$ of land to the segmented apartment $(j = a)$ and housing $(j = h)$ markets.
- Land proceeds finance transfers $\mathcal{T}_t$ and insurance claims for depreciated housing, with the government consuming any residual revenues.
- We have also considered the case where the government endogenously supplies land:

$$\max_{L_{jt}} p_{ljt} L_{jt} - \frac{\vartheta_{jt}}{2} L_{jt}^2.$$

EQUILIBRIUM

- There exists a cutoff migration cost ϵ^*_{t+1} each period. Remaining rural households entering period $t+1$ (those with $\epsilon > \epsilon^*_t$) migrate if $\epsilon \leq \epsilon^*_{t+1}$, where

$$\epsilon^*_{t+1} \equiv \max\left\{\epsilon^*_t, \left[\mathbb{E}V^{rent,0}_{t+1}\left(y_{t+1}, s_{t+1}\right) - V^{rural}_{t+1}\left(\epsilon^*_{t+1}\right)\right]/\xi_{t+1}\right\}.$$

  Rural population size in t is thus $N_{ft} = 1 - \Psi(\epsilon^*_t)$.
- The urban labor market clears

$$N_{mt} + N_{at} + N_{ht} = \int d\Phi^{rent}_t + \int d\Phi^{own}_t = 1 - N_{ft}.$$

- The law of motion for the stocks of two types of housing is $K_{jt} = (1-\delta_j)K_{j,t-1} + Y_{jt}$.
- The land markets clear for $j = a, h$:

$$L_{jt} = \overline{L}_{jt}.$$

- The urban housing and rental markets clear,

$$\int h_t d\Phi^{own}_t = (1-\delta_h)K_{h,t-1} + Y_{ht}$$

$$h_a \int d\Phi^{rent}_t = (1-\delta_a)K_{a,t-1} + Y_{at}.$$

PLAN OF ACTION

- Calibrate the economy to match Chinese population and GDP shares in both 2001 *and* 2014.
- Baseline: solve for equilibrium transitional dynamics induced by unanticipated shocks measured from the data.
  - (Untargeted) equilibrium house prices.
  - Mobility costs that replicate observed population flows.
- Experiments: decompositions, counterfactuals, and policies aimed at accelerating urbanization.
- House prices are always untargeted; population dynamics untargeted in all experiments (i.e. baseline mobility costs).

PARAMETRIZATION

- Preferences:

$$u(x_f, x_m, h) = \frac{\left(\left[\phi_X X^\rho + (1 - \phi_X) h^\rho \right]^{\frac{1}{\rho}} \right)^{1-\sigma}}{1-\sigma}$$

$$X = \left[\phi_f (x_f - \underline{x}_f)^\nu + (1 - \phi_f) x_m^\nu \right]^{\frac{1}{\nu}}$$

- Mobility costs:

$$\Psi(\epsilon) = 1 - \left(\frac{\underline{\epsilon}}{\epsilon} \right)^\kappa,$$

- The unobserved common component ξ_t of net mobility costs is decomposed into $\ln(\xi_t) = -\ln(\xi_{qt}) + \ln(\widetilde{\xi}_t)$, where ξ_{qt} stands for urban housing quality.
- Housing construction:

$$F_j(L_{jt}, \Upsilon(S_{jt}, N_{jt})) = L_{jt}^{\alpha_{Lj}} \Upsilon(S_{jt}, N_{jt})^{1-\alpha_{Lj}}$$

$$\Upsilon(S_{jt}, N_{jt}) = S_{jt}^{\alpha_S} N_{jt}^{1-\alpha_S}$$

PARAMETRIZATION

- Z_{m0} normalized to 1; Z_{f0} set to ensure μ_0^{rural} at price $p_{f0} = 1$; Z_{h0} set to ensure $p_{h0} = 1$.
- Urban income process:

$$\ln(s_{t+1}) = \rho_s \ln(s_t) + \varepsilon_{t+1}$$
$$\varepsilon_{t+1} \sim \mathcal{N}(0, \sigma_\varepsilon^2)$$
$$\ln(e_t) \sim \mathcal{N}(0, \sigma_e^2)$$

where ρ_s is a 3-state Markovian process.

- Government income floor with $\underline{y} = 0.5\underline{es}$ with means-tested transfers satisfying

$$\mathcal{T}_t(e_t s_t) = \max\{0, r_{at} h_a + p_{ft} \underline{x}_f + \chi w_t \underline{es} - w_t e_t s_t\}$$

JOINT CALIBRATION

- The joint calibration targets moments from the early 2000s.
- It also seeks to match the rural population and agricultural spend share at the end of the period.

Table: Joint Parametrization

Description	Model	Data	Source
2001 Rural Population Share	62.3%	62.3%	CSY[a] 2016
2014 Rural Population Share*	45.2%	45.2%	CSY[a] 2016
2001 Agricultural Spend Share	14.1%	14.1%	CSY[a] 2016
2014 Agricultural Spend Share*	9.2%	9.2%	CSY[a] 2016
Homeownership Rate	82.4%	82.6%	Census[b] 2000
Financial Assets to GDP	1.5	1.5	UHS[c] 2007
Housing Spend Share (Owners)	24.4%	24.5%	CFPS[d] 2014, 2016

SUMMARY OF MODEL PARAMETERS: I

Description	Parameter	Value	Explanation
Technology			
Manufacturing Productivity	Z_{m0}	1	Section 3.1.1
Agricultural Productivity	Z_{f0}	0.099	Section 3.1.1
Housing Productivity	Z_h	0.699	Section 3.1.1
Apartment Productivity	Z_a	1.944	Section 3.1.1
Housing Land Share	α_{Lh}	0.27	Section 3.1.1
Apartment Land Share	α_{La}	0.18	Section 3.1.1
Structures Share	α_S	0.3	Section 3.1.1
Housing			
Housing Depreciation	δ_h	0.025	Section 3.1.2
Apartment Depreciation	δ_a	0.05	Section 3.1.2
Rural House Size	h_f	1	Section 3.1.2
Urban Apartment Size	h_a	2.29	Section 3.1.2
Small Urban House Size	h_1	3	Section 3.1.2
Large Urban House Size	h_2	13.35	Section 3.1.2
Buyer Transaction Cost	τ_b	0.005	Section 3.1.2
Seller Transaction Cost	τ_s	0.12	Section 3.1.2
Preferences			
Risk Aversion	σ	2	Section 3.2.1
Discount Factor	β	0.842	Joint Calibration
$U(C, x_h)$: Intratemporal Substitution	ν_C	0.487	Section 3.2.1
$U(C, x_h)$: Weight on C	ϕ_c	0.047	Joint Calibration
$U(C, x_h)$: Homeownership Premium	ζ	1.3	Joint Calibration
$C(x_f, x_m)$: Intratemporal Substitution	ν_f	2.107	Joint Calibration
$C(x_f, x_m)$: Weight on x_f	ϕ_f	0.287	Joint Calibration
$C(x_f, x_m)$: Subsistence x_f	$\underline{x_f}$	0.004	Section 3.2.1

SUMMARY OF MODEL PARAMETERS: II

Description	Parameter	Value	Explanation
Net Mobility Costs			
Curvature of CDF	κ	2.8	Section 3.2.2
Lower Support of CDF	$\underline{\epsilon}$	7.263	Joint Calibration
Initial City Quality	$\xi_{q,0}$	1	Section 3.2.2
Initial Common Net Mobility Cost	ξ_0	1	Section 3.2.2
Final City Quality	$\xi_{q,\infty}$	1.277	Section 3.2.2
Final Common Net Mobility Cost	ξ_∞	0.736	Joint Calibration
Urban Income Process			
Autocorrelation of Persistent Shock	ρ_s	0.9172	Section 3.2.3
Variance of Persistent Shock	σ^2_ξ	0.0469	Section 3.2.3
Variance of Transitory Shock	σ^2_e	0.03	Section 3.2.3
Government Policy			
Income Floor Ratio	χ	0.5	Section 3.3.1
Minimum Down Payment Ratio	θ	0.3	Section 3.3.1
Mortgage Amortization Rate	γ	0.0333	Section 3.3.1
Hukou Receipt Probability	η	0.3	Section 3.3.1
Hukou Retention Probability	ρ	0.37	Section 3.3.1
Initial Housing Land	$\overline{L}_{h0}$	1	Section 3.3.1
Initial Apartment Land	$\overline{L}_{a0}$	1	Section 3.3.1
Interest Rates			
Savings Interest Rate	i	0.08	Section 3.3.2
Mortgage Interest Rate	r_d	0.06	Section 3.3.2

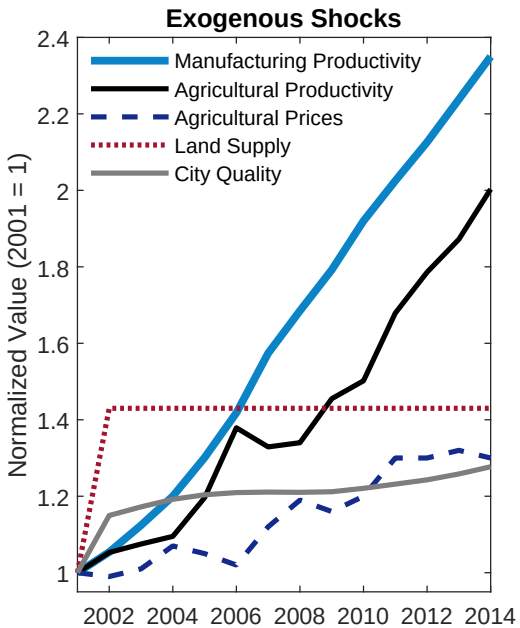
THE DYNAMICS OF CHINA'S TRANSFORMATION

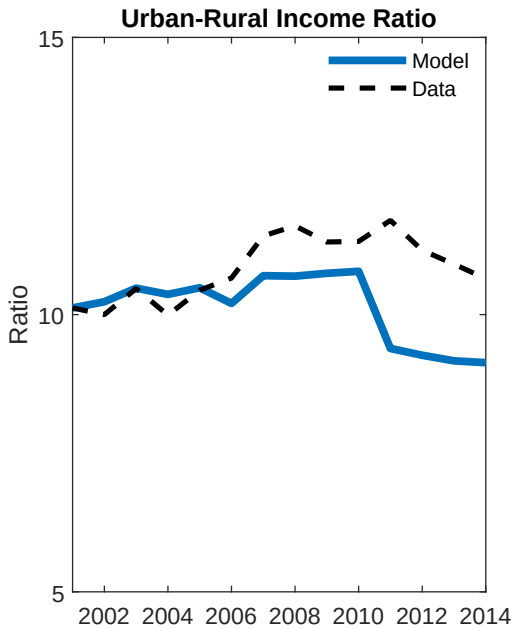
- Unanticipated shocks + perfect foresight transition path.
  - shocks are extrapolated from the data using a logistic extrapolation with smooth pasting and an asymptotic value of the shock that is twice as much from the initial value as the observed change over the sample.
- The baseline targets population dynamics using $\left\{\widetilde{\xi}_t\right\}$.
- House prices are untargeted, as is migration in subsequent counterfactual exercises with the baseline $\left\{\widetilde{\xi}_t\right\}$ unchanged.

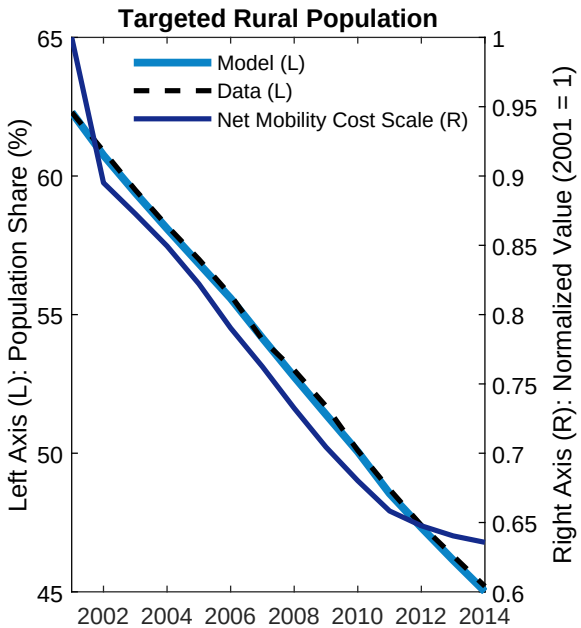
Description	Method	Explanation
Manufacturing TFP	Exogenous	$\{Z_{mt}\}_{t=1,\ldots,T}$ from 2001 – 2014 data[a]
Agricultural TFP	Exogenous	$\left\{Z_{ft}\right\}_{t=1,\ldots,T}$ from 2001 – 2014 data[a]
Agricultural Prices	Exogenous	$\left\{p_{ft}\right\}_{t=1,\ldots,T}$ from 2001 – 2014 data[a]
Land Supply	Exogenous	$\left\{L_{jt}\right\}_{t=1,\ldots,T}^{j=h,a}$ from 2001 – 2014 data[b]
City Quality	Exogenous	$\left\{\xi_{qt}\right\}_{t=1,\ldots,T}$ from 2001 – 2014 data[c,a]
Rural Population	Targeted	$\left\{\widetilde{\xi}_t\right\}_{t=1,\ldots,T}$ targets 2001–2014 data[c,a]

[a]Extrapolated. [b]One-time jump based on smoothed data. [c]Smoothed data.

THE DYNAMICS OF CHINA'S TRANSFORMATION

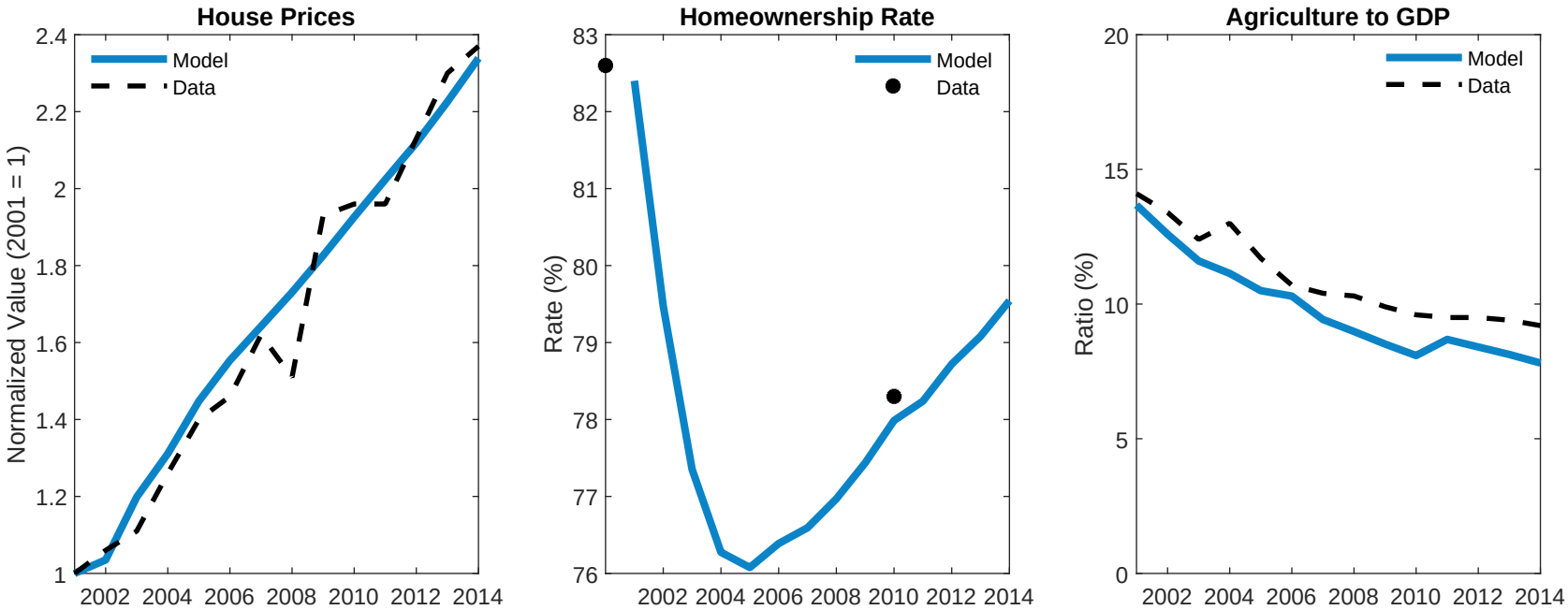






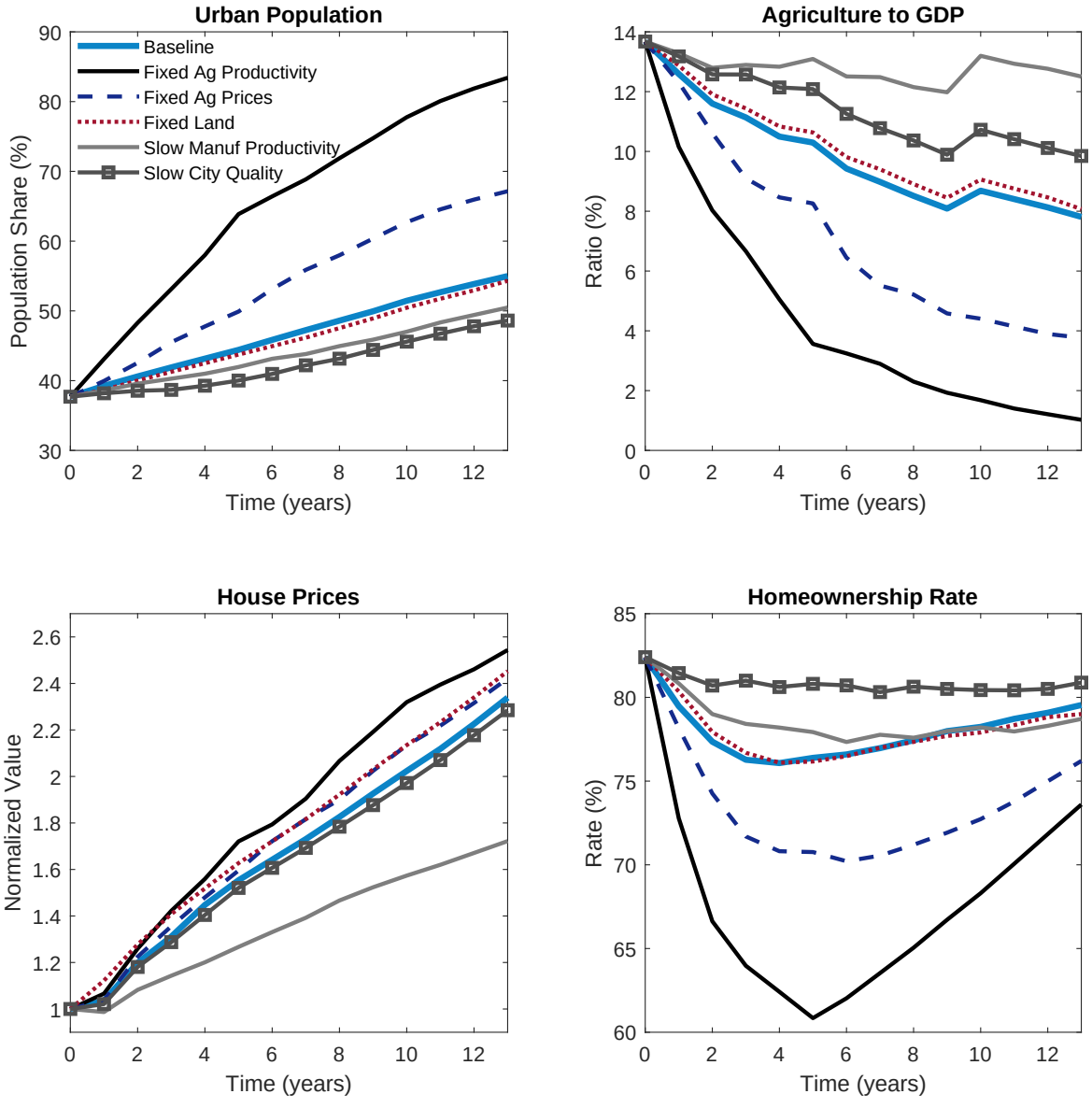
- The left panel shows the path of the exogenous shocks.
- The urban-rural income gap is large, but it shows little variation over time to rationalize migration patterns.
- The right panel shows that the mobility cost scaling factor must fall by 36% to replicate population dynamics.

CHINA'S TRANSFORMATION: MODEL VS. DATA



- House prices rise by 134% (137%) in the model (data).
- The homeownership rate in 2010 is 78.0% (78.3%) in the model (data).
- The agriculture-to-GDP ratio falls by 5.9 (4.9) percentage points in the model (data).

DECOMPOSING THE DRIVERS



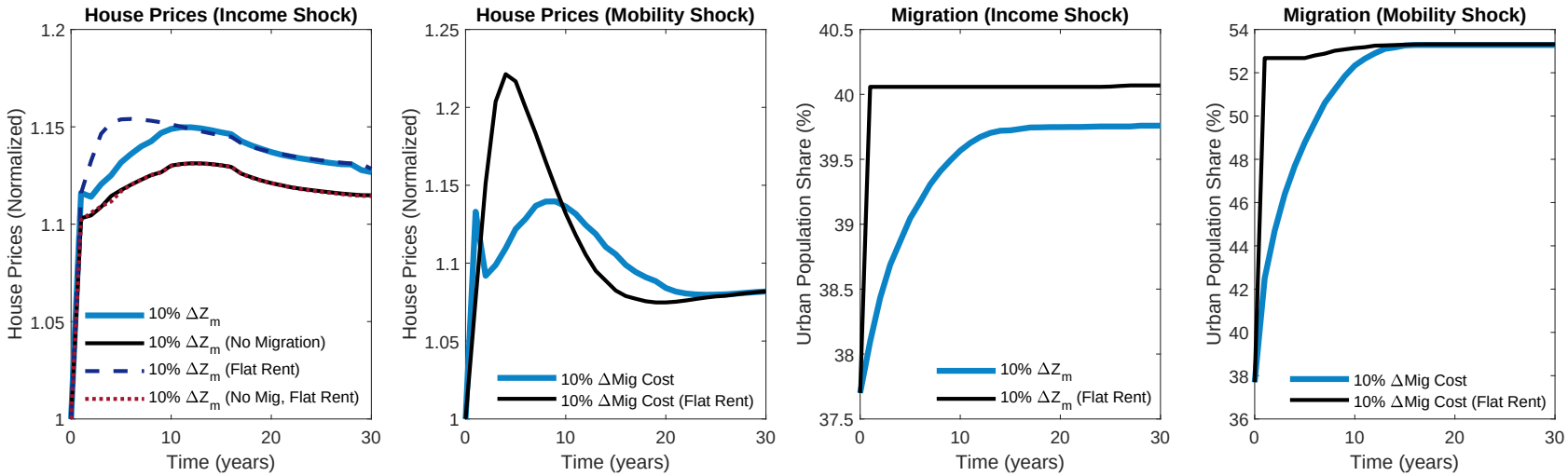
DECOMPOSING THE DRIVERS

Scenario	*Urban Pop*		*Ag-to-GDP*		*House Prices*		*Ownership*	
	$\Delta_{t=2}$	$\Delta_{t=13}$	$\Delta_{t=2}$	$\Delta_{t=13}$	$\Delta_{t=2}$	$\Delta_{t=13}$	$\Delta_{t=2}$	$\Delta_{t=13}$
Baseline	2.9	17.3	−2.1	−5.9	19.8	133.9	−5.0	−2.9
50% Slower ξ_{qt}	0.9	10.9	−1.1	−3.8	18.1	128.5	−1.7	−1.5
50% Slower Z_{mt}	1.9	12.8	−0.9	−1.2	8.2	72.2	−3.4	−3.7
Fixed Z_{ft}	10.6	45.7	−5.6	−12.7	25.9	154.4	−15.8	−8.8
Fixed p_{ft}	4.9	29.5	−3.1	−9.9	22.5	142.1	−8.1	−6.2
Fixed $\bar{L}_{jt}$	2.3	16.6	−1.8	−5.6	27.8	145.3	−4.5	−3.4

- Fixing Z_f or p_f causes the urban-rural income gap to grow as Z_m rises. Fixing Z_f induces significantly higher migration and house price growth relative to the baseline.
- The extreme case of fixed Z_m shuts down all migration and house price growth. A 50% growth slowdown cuts migration by 1/4, and house prices only rise by 72%(instead of 134%).
- Reducing amenities by half (via slower growth in ξ_{qt}) cuts house price appreciation but reduces ownership by less.

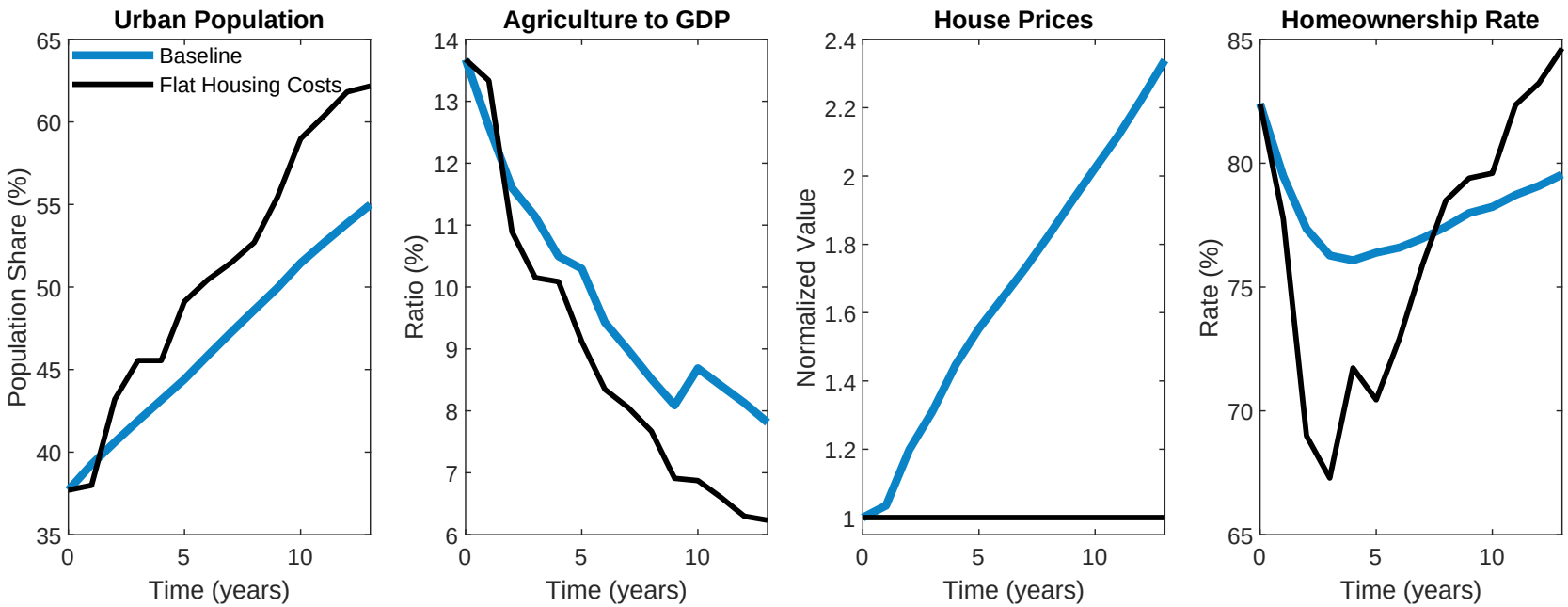
STRUCTURAL TRANSFORMATION ⇒ HOUSING

- Migration amplifies the house price response to income shocks in the short run ⇒ *the migration accelerator*.
- Population shocks by themselves can generate strong meidan-run house price momentum with delayed overshooting (downpayment saving effect) and longer-run mean reversion. (expectation effect)



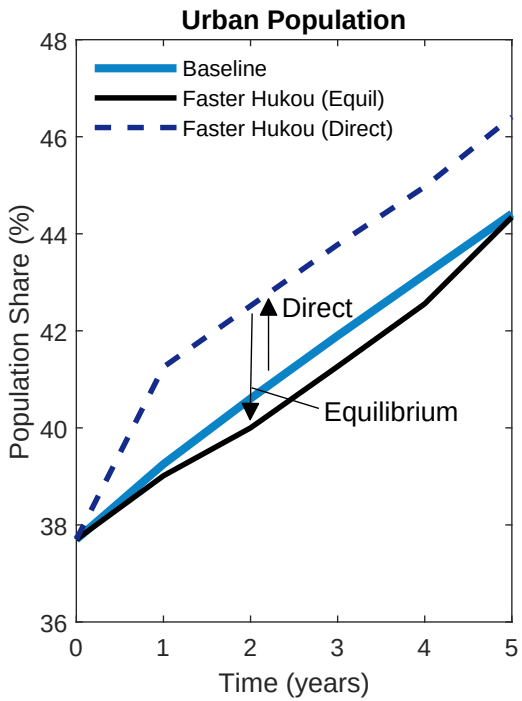
STRUCTURAL TRANSFORMATION ⇐ HOUSING

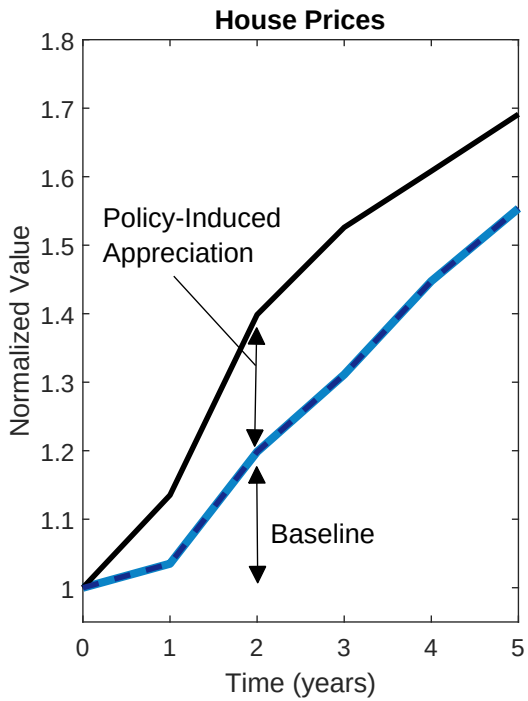
- **Experiment:** re-compute transition with fixed prices.
- House price growth reduces urbanization and structural transformation ⇒ *house price decelerator*.
- Without rising house prices, the migration surge causes a large short-run decline in ownership until migrants obtain a hukou permit and build savings for a down payment.

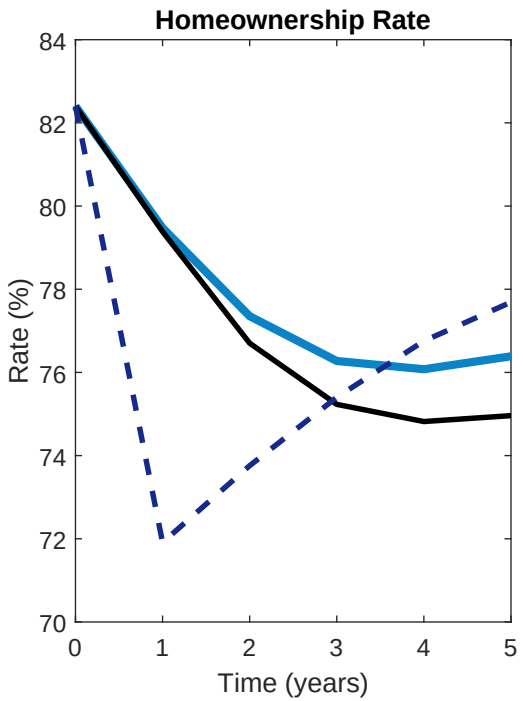


POLICIES: MIGRATION VIA HUKOU PERMITS

- **Experiment:** Cut permit time in half. **PE:** house prices follow baseline path. **GE:** re-compute equilibrium prices.
- The direct (PE) effect of increase η boosts urban migration, as migrants can benefit from all the city ammenities.
- More price appreciation (GE) raise the cost of urban living *largely neutralizing* the direct effect.

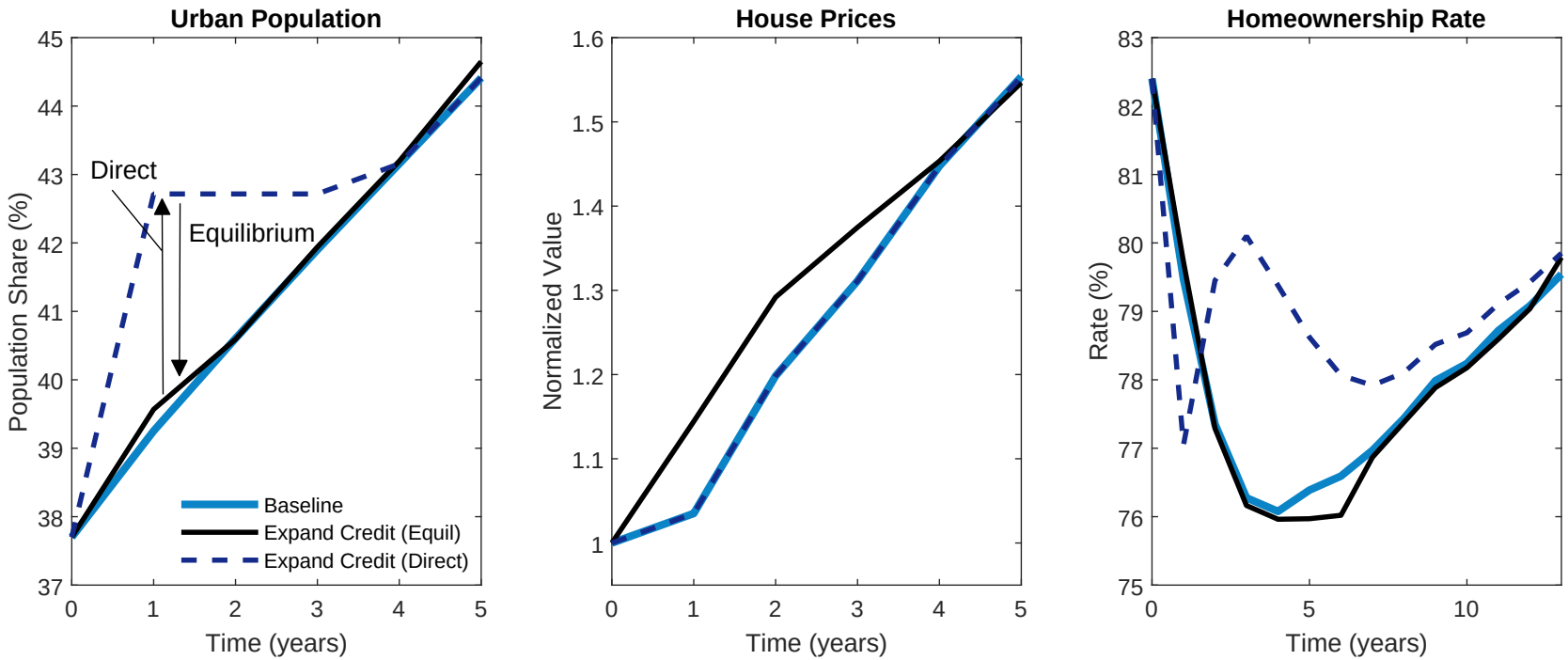






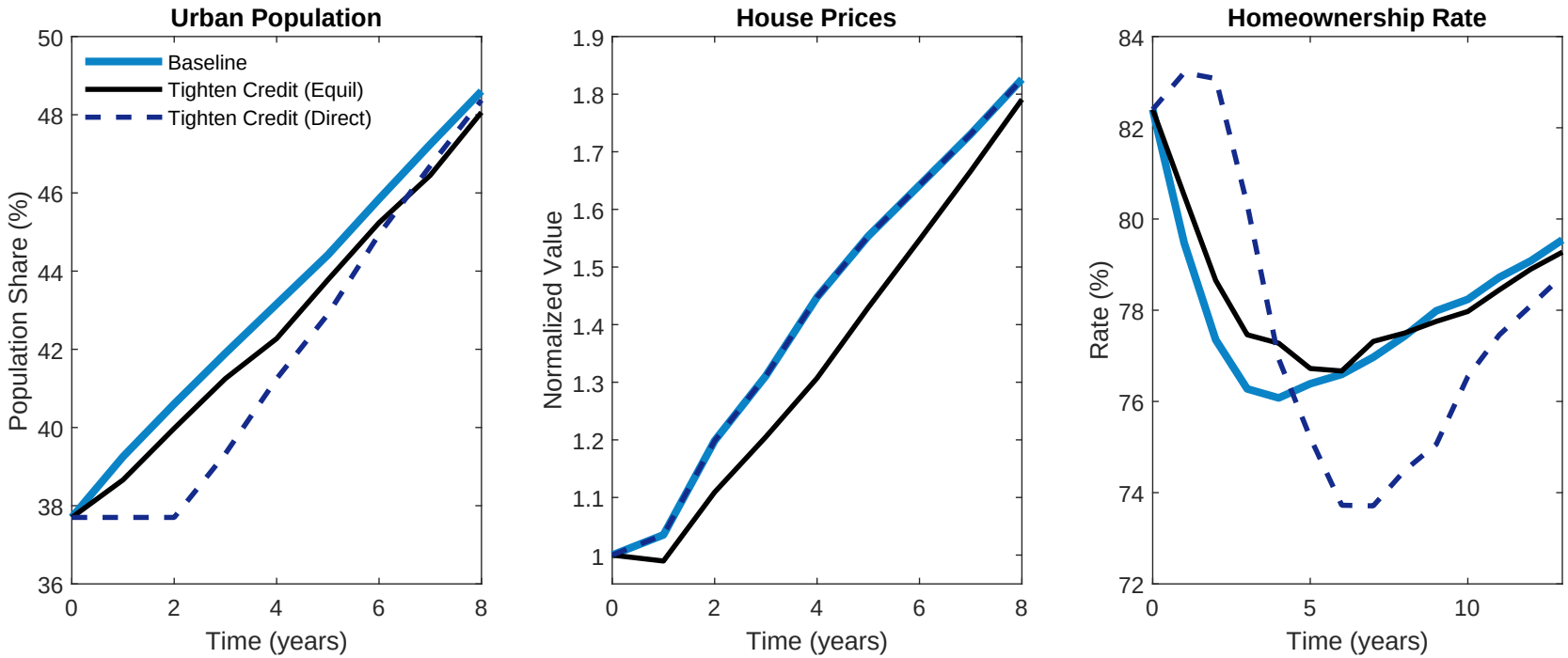
POLICIES: RELAXING ACCESS CREDIT

- **Experiment:** Eliminate the LTV constraint ($\theta = 1$). **PE:** baseline prices. **GE:** endogenous house prices.
- **PE:** Boosts urban migration, as migrants can benefit from all urban amenities (i.e. owner-occupied housing).
- **GE:** More price appreciation attenuates the surge in migration, and almost fully offsets the direct effect.



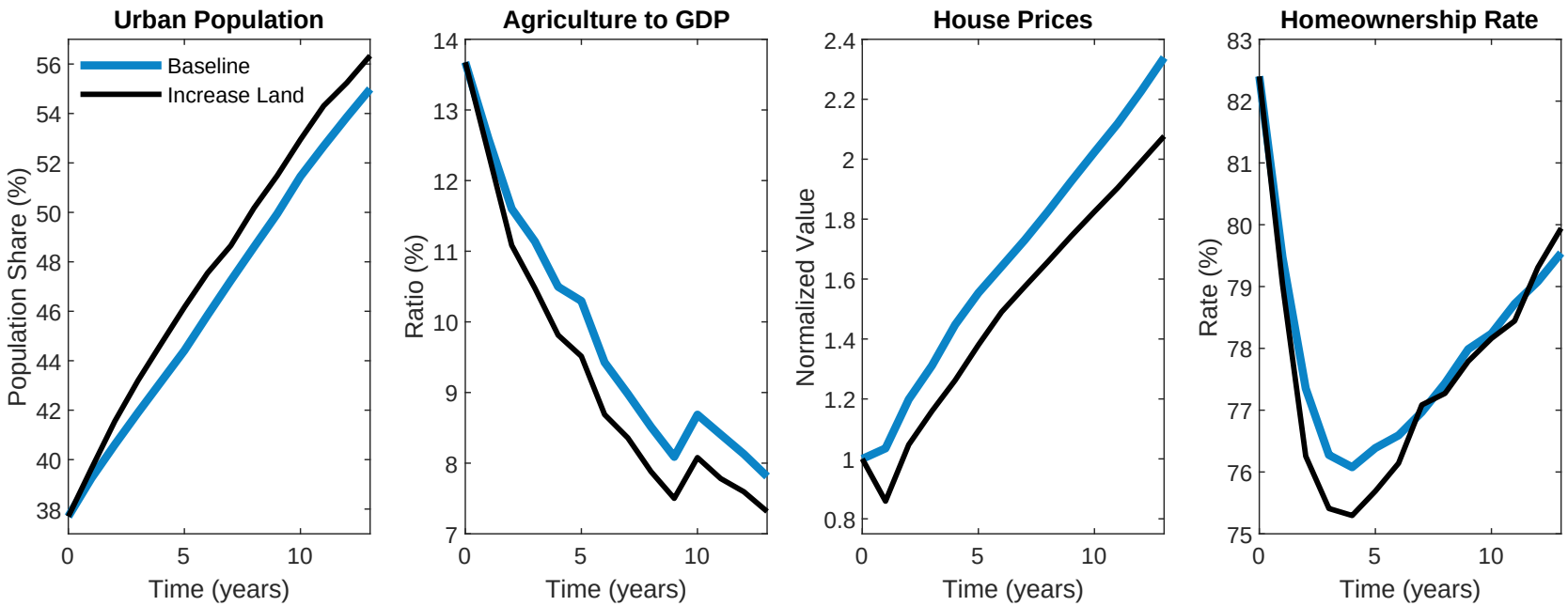
POLICIES: TIGHTENING ACCESS CREDIT

- **Experiment:** Tighten the LTV constraint from 30% to 50%.
- **PE:** Substantially reduces short-run urban migration, as it makes the house purchase more difficult.
- **GE:** The equilibrium drop in house prices mediates the decline in migration, reversing *some* of the PE effects.



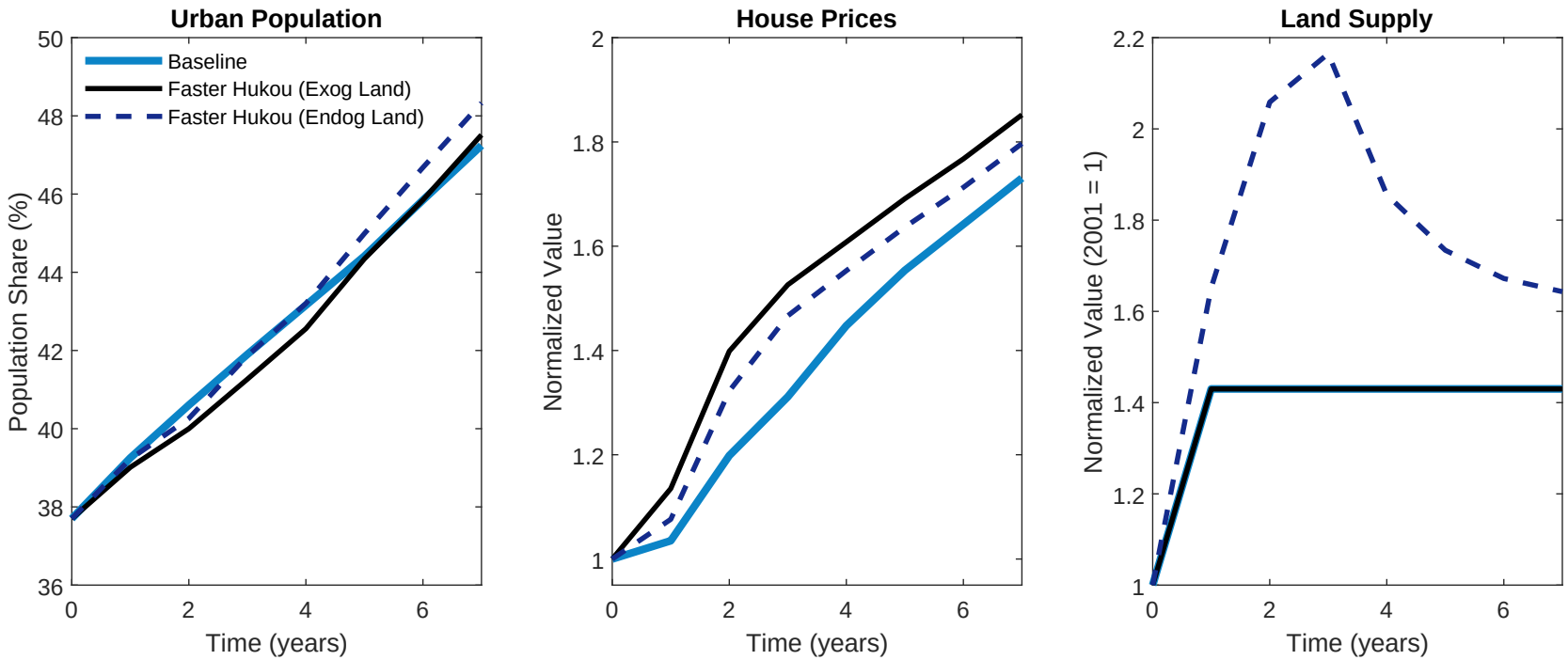
POLICIES: LAND SUPPLY EXPANSION

- **Experiment:** More land supplied for construction.
- Uniformly speeds up the urbanization process and the structural transformation (i.e., aggie share falls).
- The increased flow of rural workers to cities is not large enough reverse the decline in house prices due to a fall in the price of land.



POLICIES: ENDOGENOUS LAND SUPPLY

- **Experiment:** Land supply endogenously responds to expansions in hukou permits.
- Relative to only hukou reform, the land expansion accommodates more migrant workers.
- The land response neutralizes the negative feedback of price appreciation on urbanization.



CONCLUSIONS

- Develop a quantitative theory of house prices, structural transformation, and urbanization.
- Structural transformation and urbanization have been key to drive house prices in China. (*migration acceleator*)
- Rising house prices slow and reduce structural transformation. (*house price decelerator*)
- Relaxing hukou creates a direct PE effect, which is largely neutralized by the indirect GE effect from rising house prices.
- Efforts to slow house price growth by tightening credit harms structural transformation.
- Increasing land supply slows house price growth and accelerates structural transformation.