

# The Effect of the Tax Cuts and Jobs Act on the Housing Market

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# TCJA and the housing market

- The Tax Cut and Jobs Act of 2017 (TCJA)
  - doubles the standard deduction, repeals personal exception
  - imposes a \$750,000 cap on the mortgage interest (MID) deduction
  - imposes a \$10,000 cap on State and Local Taxes (SALT) deductions
  - lowers marginal tax rates and alters tax brackets

—→ unprecedented reduction to preferential tax treatment of housing, combined with a massive tax cut
- Tax expenditure on MID estimated to decline from 60 billion in 2017 to 34 billion in 2019
- Tax expenditure on SALT estimated to decline from 101 billion in 2017 and 21 billion in 2019
- Fraction of households itemizing their tax returns declined sharply from 28% to 10%

# A hotly-debated question

- What is the effect of the TCJA on
  - house prices
  - rents
  - homeownership
  - welfare

in environment with endogenous house prices, rents, and tenure choice?

- TCJA likely has differential effects on households, depending on household income, mortgage debt, and itemization status

# Framework

- Starts with an incomplete markets economy with
  - agents heterogeneous in terms of income and wealth
  - multiple assets: houses, deposits, mortgages
  - endogenous house price and rent; fixed housing supply
- Adopts stylized U.S. tax system
  - realistic progressive tax function
  - standard deduction vs itemized deductions
- Adds standard frictions related to home-ownership
  - lumpy transaction costs (buying and selling cost)
  - borrowing frictions (access to collateralized debt, down payment)
- Endogenizes a decision to become a landlord a la Chambers, Garriga, Schlagenhauf (2009)
  - rental properties owned by households
  - tax treatment of landlords as business entities
  - decision to become landlord is result of optimal investment strategies

## Related Literature

- Extensive literature on how taxation affects user cost of housing
  - E.g., Poterba (1984, 1991, 1992) and Poterba and Sinai (2008)
- Recent literature on effects of the MID on the housing market
  - E.g., Gervais (2002), Chambers, Garriga and Schlagenhauf (2009), Hilber and Turner (2014), Alpanda and Zubairy (2016), Davis (2019), Gruber, Jensen and Kleven (2017)
- Studies most related to ours:
  - Sommer and Sullivan (2018), Rappoport (2016), and Karlman, Kinnerud and Kragh-Sorensen (2018)
  - The MID leads to an overconsumption of housing by the wealthy, increases leverage, and can crowd-out low-income households out of homeownership through price effects

# Outline of households' problem

- At period's beginning, households observe
  - idiosyncratic labor income shock  $w$
  - holding of financial assets: deposits  $d$  and mortgages (HELOC)  $m$
  - holdings of non-financial asset: housing  $h$
- Households make joint choices w.r.t.
  - non-durable consumption  $c$
  - shelter consumption  $s$
  - current holdings of deposits  $d'$ , mortgages  $m'$ , and housing  $h'$
- Choices determine whether a household is
  - renter ( $h' = 0$ )
  - owner-occupier ( $h' = s$ )
  - landlord ( $h' > s$ )
- Assumption: same-size rental and owned units yield identical services

# Households solve

$$V(h, d, m, w) = \max_{c, s, h', d', m'} \frac{(c^\alpha s^{1-\alpha})^{1-\sigma}}{1-\sigma} + \beta EV(h', d', m', w')$$

s.t.

$$c + \rho(s - h') + d' - m' + q(h' - h) + l^s \tau^s qh + l^b \tau^b qh'$$

$$\leq w + (1+r)d - (1+r^m)m - \tau^p w - T(\tilde{y}) - \tau^s y - (\tau^h + \delta)qh' - \phi l^{h' > s}$$

$$m' \leq (1-\theta)qh'$$

$$m' \geq 0$$

$$d' \geq 0$$

$$h' \in \{0, \underline{h}_1, \dots, h_m\} \quad (\text{lumpy housing choice})$$

$$s \in \{\underline{s}, \underline{h}_1, \dots, h_m\} \quad (\text{lumpy shelter choice})$$

Process for  $T(\tilde{y})$  defined next ...

## Process for income tax function $T$

- Total income taxes paid by an individual are

$$T = \eta(\tilde{y})$$

where marginal tax rate varies over  $K$  levels of taxable income:

$$\eta_1 \quad \text{for} \quad 0 \leq \tilde{y} < \pi_1$$

$$\eta_2 \quad \text{for} \quad \pi_1 \leq \tilde{y} < \pi_2$$

⋮

$$\eta_K \quad \text{for} \quad \pi_{K-1} \leq \tilde{y} < \pi_K$$

Taxable income  $\tilde{y}$  defined next ...



# Process for taxable income $\tilde{y}$

- Total income

$$y = \underbrace{w}_{\text{labor income}} + \underbrace{rd}_{\text{interest income}} + \underbrace{NRI}_{\text{net rental income}}$$

- Taxable income

$$\tilde{y} = y - \underbrace{\psi(j)}_{\text{allowable deductions}} \quad j \in \{R, O, L\}$$

where  $R = \text{renter}$ ,  $O = \text{occupier}$  and  $L = \text{landlord}$

Net rental income ( $NRI$ ) and deductions' function  $\psi$  defined next ...

# Process for net rental income *NRI*

- Landlords offset rental income  $\rho(h' - s)$  with business expenses prior to income taxation so that net rental income (*NRI*):

$$\begin{aligned} NRI = & \underbrace{\rho(h' - s)}_{\text{rental income}} - \underbrace{\tau^m r^m m \left( \frac{h' - s}{h'} \right)}_{\text{mortgage interest on rental space}} - \underbrace{\tau^h q (h' - s)}_{\text{prop. tax rental space}} - \underbrace{\delta_h q (h' - s)}_{\text{maint. rental space}} + \\ & - \underbrace{\tau^{LL} q (h' - s)}_{\text{depr. rental structure}} \end{aligned}$$

# Process for deductions' function $\psi$

- Allowable deductions' function  $\psi$ :

$$\psi(R, O, L) = \begin{cases} \underbrace{e}_{\text{pers. exemp.}} + \max\left\{ \underbrace{\xi}_{\text{std. deduction}}, \underbrace{\tau^s y}_{\text{SALT}} \right\} & \text{if renter } (R) \\ e + \max\left\{ \xi, \underbrace{\left( \tau^s y + r^m m \left( \frac{S}{h'} \right) + \tau^h qs \right)}_{\substack{\text{itemized deductions} \\ \text{owner-occupied space}}} \right\} & \text{if owner } (O, L) \end{cases}$$

- Households itemize if dollar value of itemized deductions exceeds standard deduction  $\xi$

# Equilibrium

- Stationary equilibrium
- Markets clear:
  - Housing market clears:  $\int h'(x)d\lambda = H$ , where  $H$  is fixed
  - Shelter market clears:  $\int (h'(x) - s(x))d\lambda = 0$

# Calibration strategy

- Chooses parameter values for
  - minimum down payment requirement
  - interest rate and mortgage rate
  - maintenance costs and transaction costs
  - tax rates (plus taxable income cutoffs) and tax deductions
  - risk aversion and income process

from data or other studies

- But also estimates values for
  - discount factor
  - Cobb-Douglas share of non-durable consumption
  - fixed cost of being a landlord
  - state income tax rate

## Internal calibration

- Calibrate 4 parameters ( $\alpha$ ,  $\beta$ ,  $\phi$ , and  $\tau^s$ ) by matching 5 moments from US cross-section using over-identified simulated method of moments

Moment	Data	Model
Home-ownership rate	0.65	0.648
Landlord rate	0.10	0.10
Expenditure share on housing	0.25	0.247
Fraction of homeowners with collateral debt	0.65	0.655
Agg. ratio of SALT to Federal income taxes	0.278	0.279

- Calibrated parameters:  $\alpha = 0.684$ ,  $\beta = 0.986$ ,  $\phi = 0.055$ , and  $\tau^s = 0.03$
- NB: State income tax rates vary across regions. We estimate  $\tau^s$  so that the relative local income tax burden matches the U.S. data

## ① Partial reform

- Doubles standard deduction, repeals personal exemption, imposes caps on SALT and MID
- Results can be compared to a straightforward MID repeal

## ② Full reform

- Additionally lowers tax rates, alters tax brackets
- Accounts for the majority of the tax cut

# The TCJA in a nutshell

- Partial reform induces a sharp drop in the itemization rate; reduces house prices and leverage; boosts homeownership
- Full reform reverses the price declines through further tax cuts

	Prices			% Fraction of		% Change in	
	$q$	$\rho$	$\frac{q}{\rho}$	Itemizers	Homeowners	Mortg. debt	Tax revenue
Baseline	2.98	0.240	12.4	28.4	64.8	–	–
Partial	2.92	0.242	12.1	2.0	68.7	-19.3	-3.4
Full	2.98	0.246	12.1	1.7	68.3	-20.0	-15.7



## Partial reform: Mechanisms

- Itemization rate plummets  $\Rightarrow$  doubling of the standard deduction generates tax savings for HHs who no longer itemize
- For these HHs, housing consumption is no longer subsidized by MID and property taxes  $\Rightarrow$  HHs shift consumption away from housing to nondurables
- This drop in housing demand induces a price decline
- Lower prices + tax windfall allow non-itemizing HHs enter homeownership or buy more shelter
- Remaining itemizers also increase their housing consumption as the housing subsidy is still operative and house prices are lower

## Full reform: Mechanisms

- A big tax windfall – federal income tax revenue declines by 18%
- Boost demand for housing (and other goods) by the now wealthier households
- Increases in demand for housing bids up house prices to nearly their pre-reform level
- Homeownership rate remains elevated as higher disposable incomes increase housing affordability even at pre-reform prices
- Itemization rate declines a touch, as lower marginal tax rates reduce size of housing subsidy (*ceteris paribus*)

# Doubling of the standard deduction has large effect on the itemization rate

- Post-reform, remaining itemizers are in the top quintile of income distribution
- Typically have large homes financed by mortgage debt

	Baseline	Partial	Full
Fraction itemizing	0.284	0.019	0.017
Itemized deduction amount	0.313	0.419	0.413
<u>Fraction Itemizing by Wage Quintile</u>			
1st quintile (bottom)	0.070	0.000	0.000
2nd quintile	0.182	0.000	0.000
3rd quintile	0.261	0.000	0.000
4th quintile	0.357	0.000	0.000
5th quintile (top)	0.574	0.116	0.108

# (Loss of) Preferential tax treatment of housing affects housing demand

- HHs who no longer itemize reduce housing demand
- Housing reallocated to HHs in the top and bottom quantiles of the income distribution



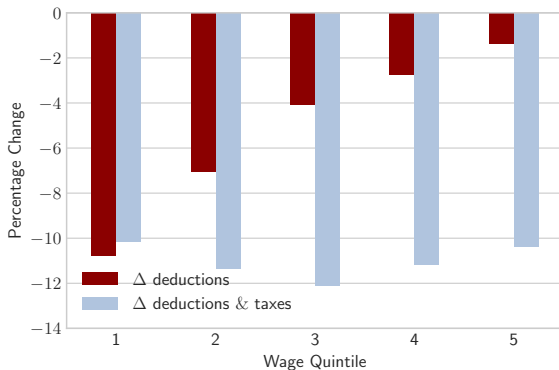
# (Loss of) Preferential tax treatment of housing also affects non-durable consumption

- HHs who no longer itemize shift away from housing to nondurables
- Non-itemizing HHs spend part of tax windfall on non-durables, too
- Remaining itemizers increase consumption only in response to the marginal tax cuts



# How large is the tax windfall?

- Under the partial reform, percentage decline in total tax burden is the largest for the bottom income quintile
- Under the full form, decline similar across the income distribution



- 80% of the total tax cut comes from changes to marginal tax rates and tax brackets

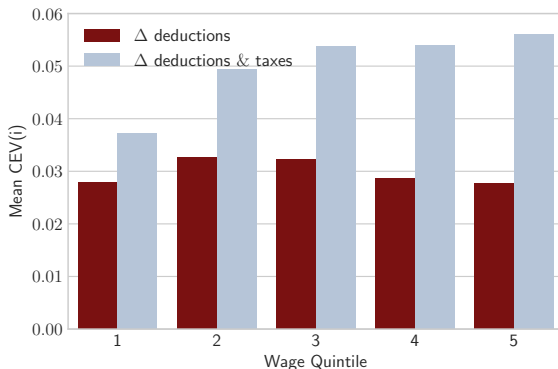
# What is the effect on progressivity of the tax code?

- Under the partial reform, the share of the total tax burden rises with income, increasing the tax code's progressivity
- The full reform undoes the effect



# Welfare Gains (CEV)

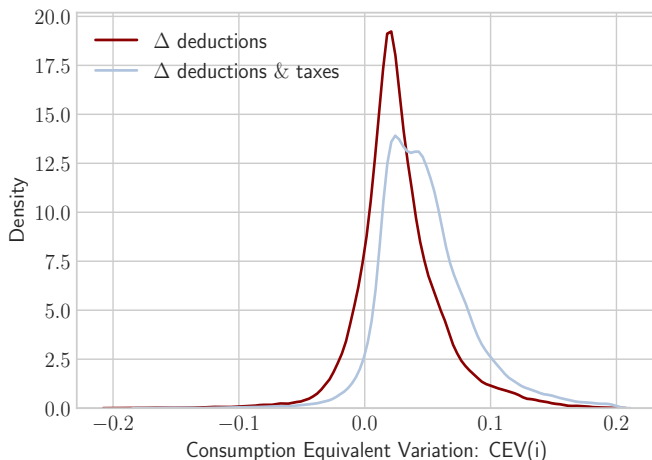
- Partial reform: lower house prices, progressive tax windfall, and re-optimization of consumption produce equitable welfare gains
- Full reform: Added tax cuts further boost welfare gains but skew them toward the wealthy





# Not everybody (but nearly) gains welfare

- Heterogeneity to be explored ...



# Conclusions

- Build and calibrate a model of the housing market with
  - endogenous house prices, rents, tenure choice, and fully specified U.S. tax code
  - study the equilibrium effects of the TCJA
- Overall, the TCJA
  - affects housing demand through two opposing channels: reduction in preferential tax treatment vs tax saving. (In equilibrium the two forces roughly offset, leading to no change in house prices)
  - boosts homeownership rate through price and income effects
  - improves welfare but with greater gains for the top income quantiles. (But remember, in our model, nobody has to pay for it ... )
  - keeps preferential tax treatment at the very top of the income distribution
  - could be a progressive tax reform had it not been for cuts to marginal tax rates and adjustments to tax brackets