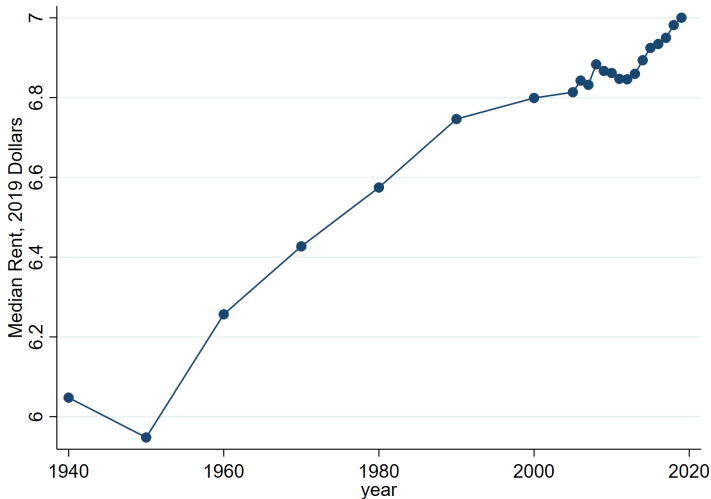# Housing and Land-Use Regulation

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Stanford GSB and NBER

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Rent rising faster than CPI since 1960

Increasing quality or increasing production/regulation cost?

All Aspects of Housing Increasingly Regulated

Land-Use:

- Zoning, environmental reviews, planning committee discretion, open space requirements, minimum lot size, affordable housing provisions

Building Codes:

- Environmental building standards, safety standards, natural disaster mitigation, quality standards, health risk mitigation

Mortgage Market:

- Fannie/Freddie mortgage guarantees, FHA subsidies, foreclosure mitigation

Tenant Protections:

- Just cause eviction, rent stabilization, landlord required maintenance

Regulatory/In-Kind Redistribution:

- Housing vouchers, public housing, LIHTC, inclusionary zoning, prevailing wage construction requirements

Land-Use Regulation: A solution for externalities?

Housing/Land-Use choice have huge external effects:

- Rent Control (Autor et al, 2014): 85% of property value loss due to externalities, only 15% due to regulated lower rents. $6 external effect per $ 1 lost rental payment

- Urban Revitalization Investment (Rossi-Hansberg et al, 2010):$2-$6 external effect per $1 invested

- Vacancy/Foreclosure Externalities (Gerardi et al, 2015): 1% drop if property value within 0.1 miles

- LIHTC Construction in Low-Income Areas (Diamond and McQuade, 2019): $ 6 dollars external welfare effects per $1 spent on construction

Explosion of Land-Use Regulation since 1970

Land Use Cases Per Million People

Ganong and Shoag (2017)
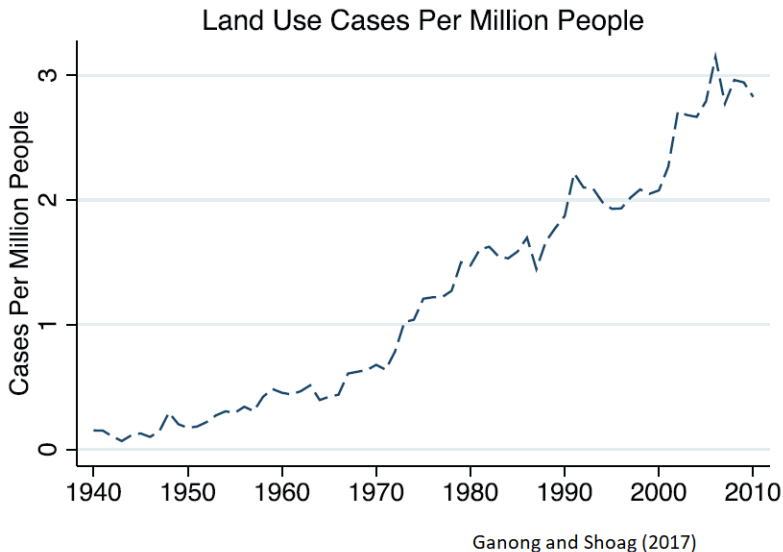
# Land-Use Regulation: A gatekeeper of opportunity?

Hseih and Moretti (2019), Herkenhoff et al, (2018): Model land-use restrictions as pure housing supply distortions, no scope for positive effects

HM : Growth of land-use restrictions from 1964-2009 lowered aggregate growth by 36%

HOP: Reset land-use to 1980 levels would raise aggregate output by 7.2%

Need to get more people to the Bay Area!!

Is it bad luck that high wage places are regulated?
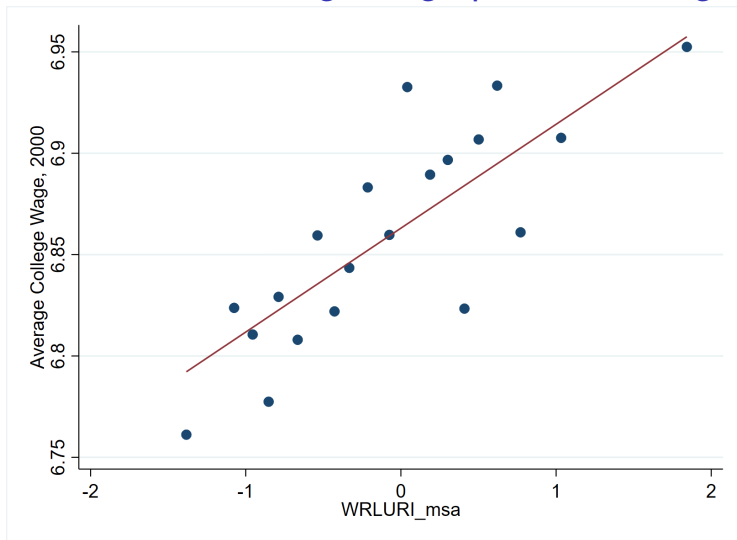
Downsloping labor demand? Reverse causality? Causal effect?
Unobserved Skill Sorting?

Amenities and Land-Use Regulation

Amenities Changes 1980-2000 vs Land-Use Regulation Index

Ln Patents PC	AQI	Traffic	Student-Teacher Ratio
0.14***	-0.13***	-0.04*	0.07**
(0.05)	(0.04)	(0.02)	(0.01)
+	+	+	-

Park Spending	Clothing Stores PC	Restaurants PC	Property Crime
-0.10**	0.05**	-0.03*	-0.19***
(0.04)	(0.02)	(0.03)	(0.03)
-	+	-	+

Does Land-Use regulation help create amenities? But who gets access to them?

Land-Use through the lens of Diamond(2016)

Worker Utility:

$$U_{ijt} = w_{sjt} - \beta_s r_{jt} + \gamma_s A_{jt} + \sigma_s \epsilon_{ijt}$$

Inverse-Housing Supply:

$$r_{jt} = \alpha_0 + (\alpha_1 + \alpha_1 * WRI + \alpha_2 * LandUnaval) * ln(H_j + L_j) + \epsilon_{jt}^r$$

Inverse-Labor Demand:

$$w_{sjt} = f_s(H_{jt}, L_{jt}) + \theta_{sjt}$$

Amenity Supply:

$$A_{jt} = \gamma^{amen} ln \frac{H_{jt}}{L_{jt}} + \epsilon_{jt}^A$$

Worker Preferences: **Labor Demand, Housing Supply:**

	Non-College	College
Wage	4.026***	2.116***
	[0.727]	[1.146]
Rent	-2.496***	-1.312***
	[0.451]	[0.711]
Expenditure Share	0.62	0.62
	-	-
Amenity Index	0.274*	1.012***
	[0.147]	[0.115]

Exp(Land Use Regulation)	0.091***
	[0.019]
Exp(Land Unavailability)	0.021**
	[0.010]
Base House Supply Elasticity	0.014
	[0.089]
Elasticity of College Wage wrt College Emp	0.229
	[0.307]
College Wage wrt Non-College Emp	0.312
	[0.367]
Non-College Wage wrt Non-College Emp	-0.552***
	[0.202]
Non-College Wage wrt College Emp	0.697***
	[0.163]

Amenity Supply:

College Emp Ratio	2.60**
	[1.13]

Effect of Restricting Housing Supply in 1 city:

Simulate Model

In the regulated city:

- Housing rents rise
- Skill mix increases → amenities improve
- Out-migration causes high-skill wages to fall, low-skill wages to rise
- Net welfare effect negative for both skill groups, but less bad for high skill

Suggestive restricting housing supply improves amenities, but hurts labor productivity/agglomeration

What are the costs/benefits of land-use regulation?

- Diamond (2016) not built for this question

- Folklore: Homeowners want to raise property values
  - How true is this?
  - At the expense of what?

- Little direct work estimating costs/benefits of regulations
  - Key exception: Turner, Haughwout, and Van Der Klaauw (2014)

Turner, Haughwout, and Van Der Klaauw (2014)

Model:

- Three channels through which land-use impacts welfare:
    - Own lot effect: Restrict choice set of building options (negative welfare value)
    - Externality effect: Increases quality of amenities in area
    - Supply effect: Lowers number of housing units, raises prices (distributional welfare effects, negative aggregate effect)

Data:

- Empty land transactions (CoStar):
    - Purged of housing quality, hones in on true land values
    - Weird transactions - how much open land sold in regulated area? Hidden red tape regulation?
- Whartan Land-Use Regulation Survey:
    - Municipal level index on restrictiveness of land-use

Research Design

- Own lot effect: RDD estimate of land value on boundaries of munis with different land-use rules.
    - Amenities smooth on boundary, only restricts building
    - Issue: Other things jump on boundary (schools, taxes, services)

- Externality effect: Differential land value in center vs edge of muni, close to less regulated muni
    - Externality should spatially decay. Less value close to border of less regulated area
    - Issue: Other dis-amenities of borders? Large roads, rivers

- Supply effect: RDD in developed land share over muni boundaries

Own Lot Effects

WRLURI 500 m						
Dist. < 0.1	0.49	−1.34	−5.07	−6.73	−1.52	−3.90
	(1.29)	(1.25)	(2.46)**	(2.15)***	(2.35)	(2.00)*
	275/90	263/86	263/86	263/86	263/86	263/86
Border pair FE	Y	Y	Y	Y	Y	Y
Quarter dummies	Y	Y	Y	Y	Y	Y
Per pupil expenditures		Y	Y	Y	Y	Y
Property taxes per acre		Y	Y	Y	Y	Y
Demographics			Y	Y	Y	Y
Parcel controls I				Y		Y
Parcel controls II					Y	Y

Future work look at zoning borders within muni?

Changing rules over time: Anagol, Ferreira, and Rexer (2021)

External Effects

	1	2	3	4	5	6	7	8
WRLURI 1 km								
$1 > x > 0.5, 0.1 > x > 0$	1.00	3.36	−5.26	5.14	−1.24	−2.24	−0.98	−1.83
	(10.68)	(12.83)	(15.64)	(15.68)	(17.96)	(18.82)	(16.12)	(15.15)
	545/174	448/137	545/174	545/174	448/137	448/137	448/137	448/137
$0.5 > x > 0.25, 0.25 > x > 0$	−1.91	−0.69	−2.28	−3.00	−0.98	−1.24	−1.27	−1.71
	(1.22)	(1.56)	(1.09)**	(1.32)**	(1.36)	(1.28)	(1.39)	(1.48)
	505/150	440/126	505/150	505/150	440/126	440/126	440/126	440/126
$0.5 > x > 0.25, 0.1 > x > 0$	−1.55	0.05	−2.51	−3.34	−0.11	−0.78	−0.63	−1.34
	(1.60)	(1.69)	(1.18)**	(1.55)**	(1.63)	(1.39)	(1.68)	(1.63)
	381/128	331/109	381/128	381/128	331/109	331/109	331/109	331/109
Municipality-border FE	Y	Y	Y	Y	Y	Y	Y	Y
Quarter dummies	Y	Y	Y	Y	Y	Y	Y	Y
ΔPer pupil expenditures		Y			Y	Y	Y	Y
ΔProperty taxes per acre		Y			Y	Y	Y	Y
ΔDemographics				Y	Y	Y	Y	Y
Parcel controls I				Y	Y		Y	Y
Parcel controls II				Y		Y		Y
Interior dummy				Y		Y		Y

Need more power here. Surprising to find mostly negative effects

Supply Effects

Share urban (250 m)	−0.03	−0.03	−0.04	−0.04	−0.05	−0.04
	(0.01)**	(0.01)**	(0.01)***	(0.01)**	(0.02)***	(0.01)**
	90	76	76	64	76	64
Border pair FE	Y	Y	Y	Y	Y	Y
Per pupil expenditures		Y	Y	Y	Y	Y
Property taxes per acre		Y	Y	Y	Y	Y
Demographics			Y	Y	Y	Y
Municipal controls I				Y		Y
Municipal controls II					Y	Y

Overall conclusion of negative welfare effects

Why are regulations so strong if they hurt everyone?

Diamond (2016) ignores the spatial scope of costs and benefits of regulation
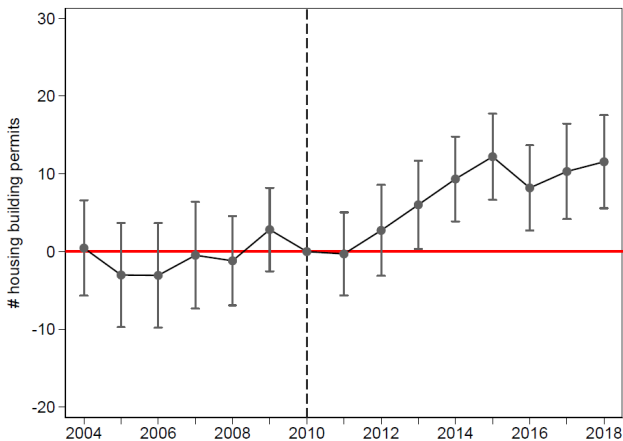
Costs of housing density spatially concentrated:

- traffic, crowded schools, pollution, noise

Benefits of housing density spatially diffuse:

- Amenity variety, affordable housing, shorter commutes

Tricaud (2022): Forced Municipal Cooperation

Figure 3: Impact on housing building permits

Effect concentrated in urban, built up areas, no impact on house prices

CA Examples of Preemption

- SB9 (passed 2021): Subdivide single family lots and build a duplex on each (4 houses total)

- SB827 (failed): Allow very large multi-family development within 0.5 miles of mass transit

- Should land-use be regulated at the state level?
  - Create tension with Tiebout Sorting

Conclusion

- Little work on what the benefits are to land-use regulation and their spatial scope

- Work mostly focused on the costs due to labor misallocation and productivity loss

- Surely some regulation is good due the huge externalities of housing choices

- A more nuanced view of which types of regulations help and hurt the most might have more policy influence to improve allocative efficiency and allow for some internalization of externalities