The Economics of Place-Making Policies

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A Central Paradox

- Why is it that in an era in which transportation and communication costs have virtually vanished, cities have become more important than ever?
- Urban resurgence is visible in high income levels, robust housing prices, and a concentration of innovation in urban areas.

The Hypothesis

- One major effect of globalization has been an increase in being smart.
- You become smart by being around other smart people– we are a social species.
- Cities, like Boston and New York and London and Bangalore make that possible.
- The same death of distance that did so much to hurt Detroit helped NYC.

Intellectual Spillovers in Cities are not New

- Plato and Socrates in Athens
- Linear Perspective in Renaissance Florence
  - Brunelleschi to Donatello to Massaccio to Lippi to Botticelli
- The Skyscraper in Chicago
  - Jenney, Burnham, Sullivan, Adler, Wright
- But these weren't the business of Chicago or Florence

Wool and Food Cities

- For 1,000 years, cities like Bruges and Florence were “clothing cities” specializing in wool.
- New York, New Orleans, Manchester, Liverpool and cotton.
- Jeremiah Thompson and the packet lines.
- But much of urban America was in the food business.

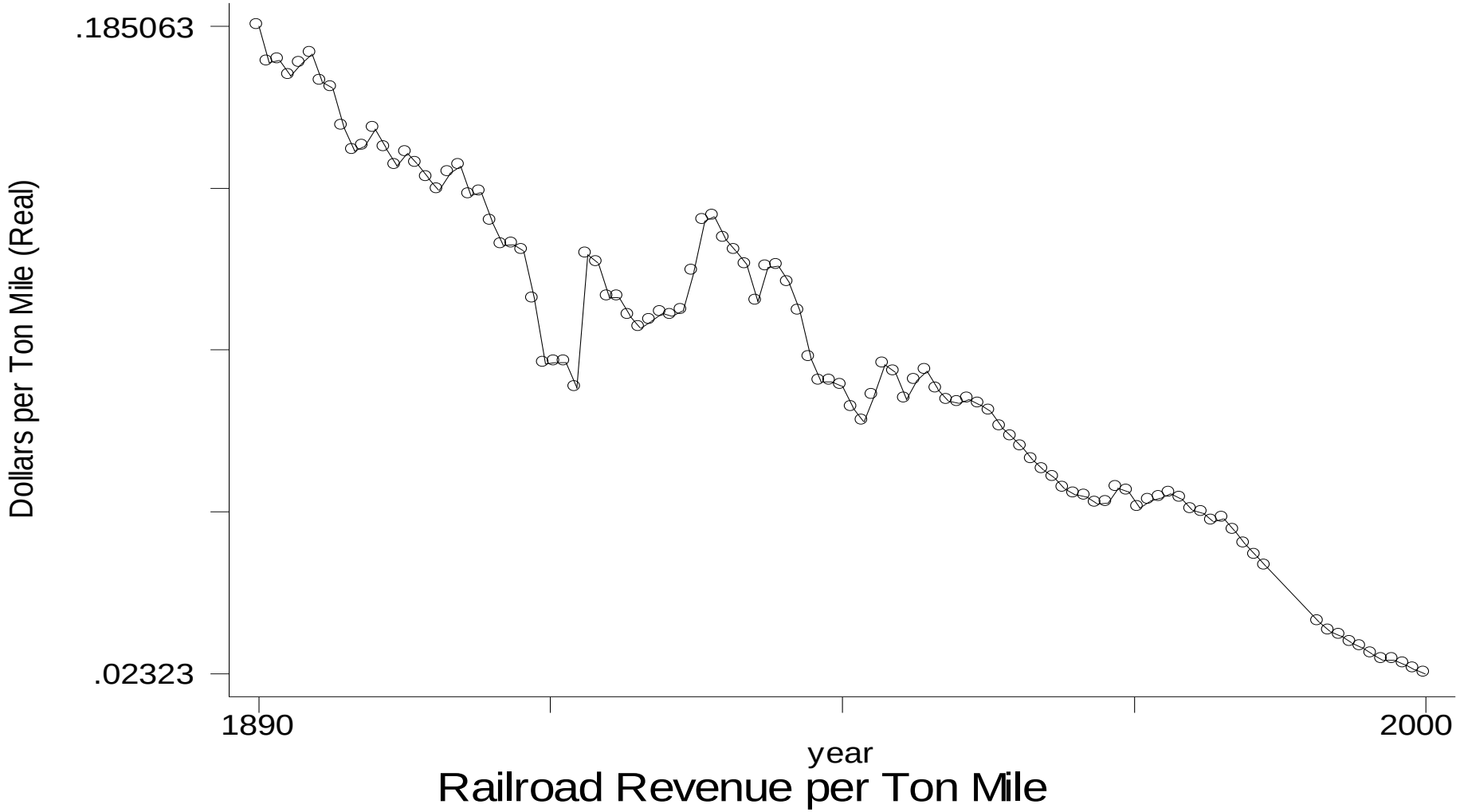
Cities, Water, Corn and Pigs

- In 1900, all 20 of the largest American cities were on waterways.
  - Oldest were where the river meets the sea; the newest at St. Anthony's Falls.
- In 1816, more expensive to more goods 32 miles over land than across the Atlantic
- Cities formed a vast transport network for moving things like corn in porcine form to be slaughtered and moved to eastern markets.

Transportation and Place-Making

- Many important place-making government interventions have been in transport.
- Canals were either highly subsidized or government built (Erie) and they at least appear to have created cities.
- Before 1820, Buffalo, Rochester and Syracuse had less than 2,000 people, by 1850, they were at 42k, 36k and 22k respectively.
- Rail and water in 1850 strongly predict subsequent growth (endogeneity)
- The 19th century food cities in the U.S.

The Decline of the Costs of Moving Goods



The 20th Century: Cities and Cars

- Much of 20th century urban change is often associated with cars and declines in transport costs.
  - Cars were also a gift of the city– Otto-Daimler-Maybach in Cologne; Benz in Mannheim; Ford in Detroit.
  - Detroit in 1900 as the Silicon Valley of its day.
- But living with cars requires a different urban structure than public transit and walking.
- Changes in transport costs change the demand for clustering around waterways and trucks.

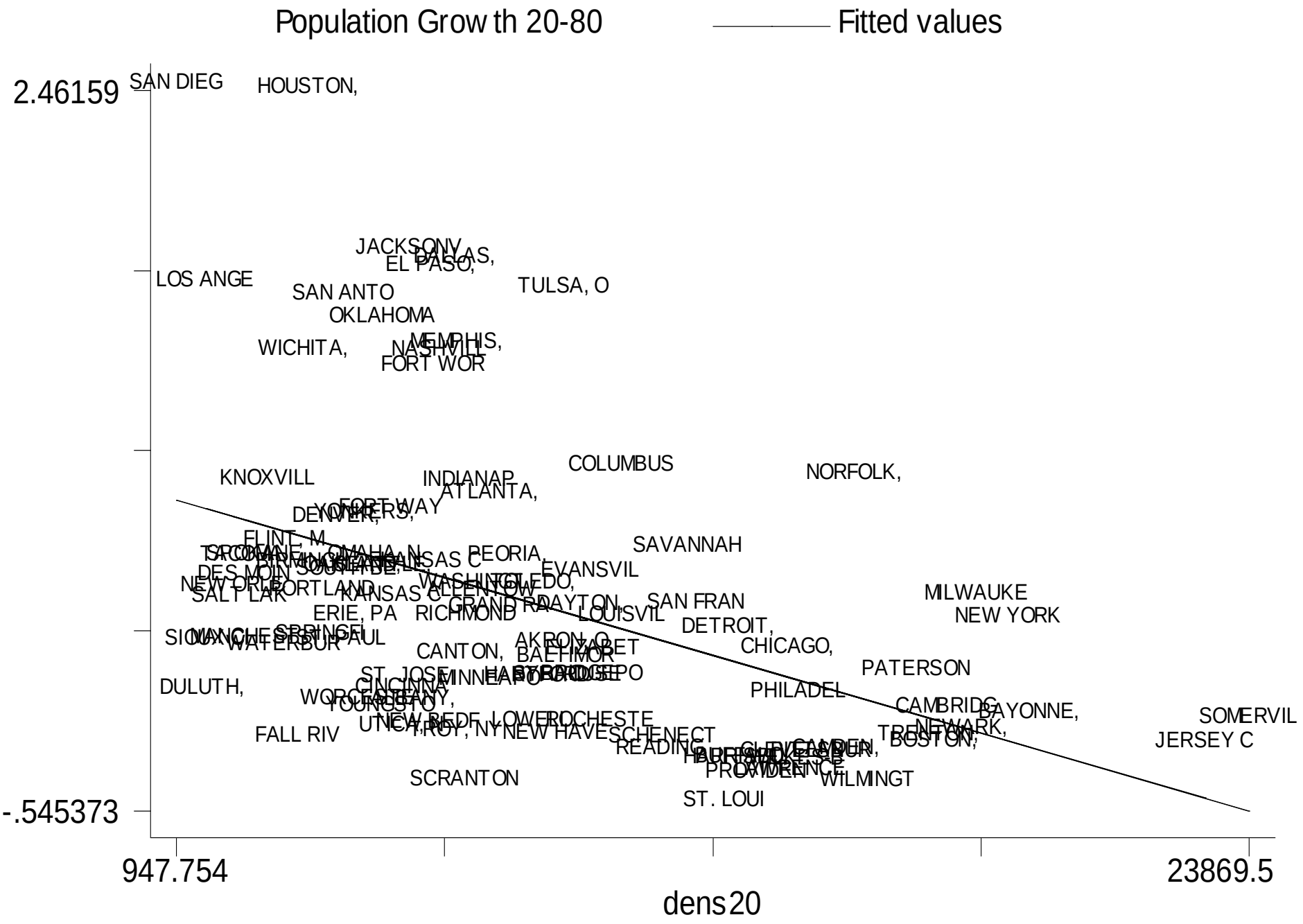


Figure 8: Density and City Growth 1920-1980

The Move to Warmth

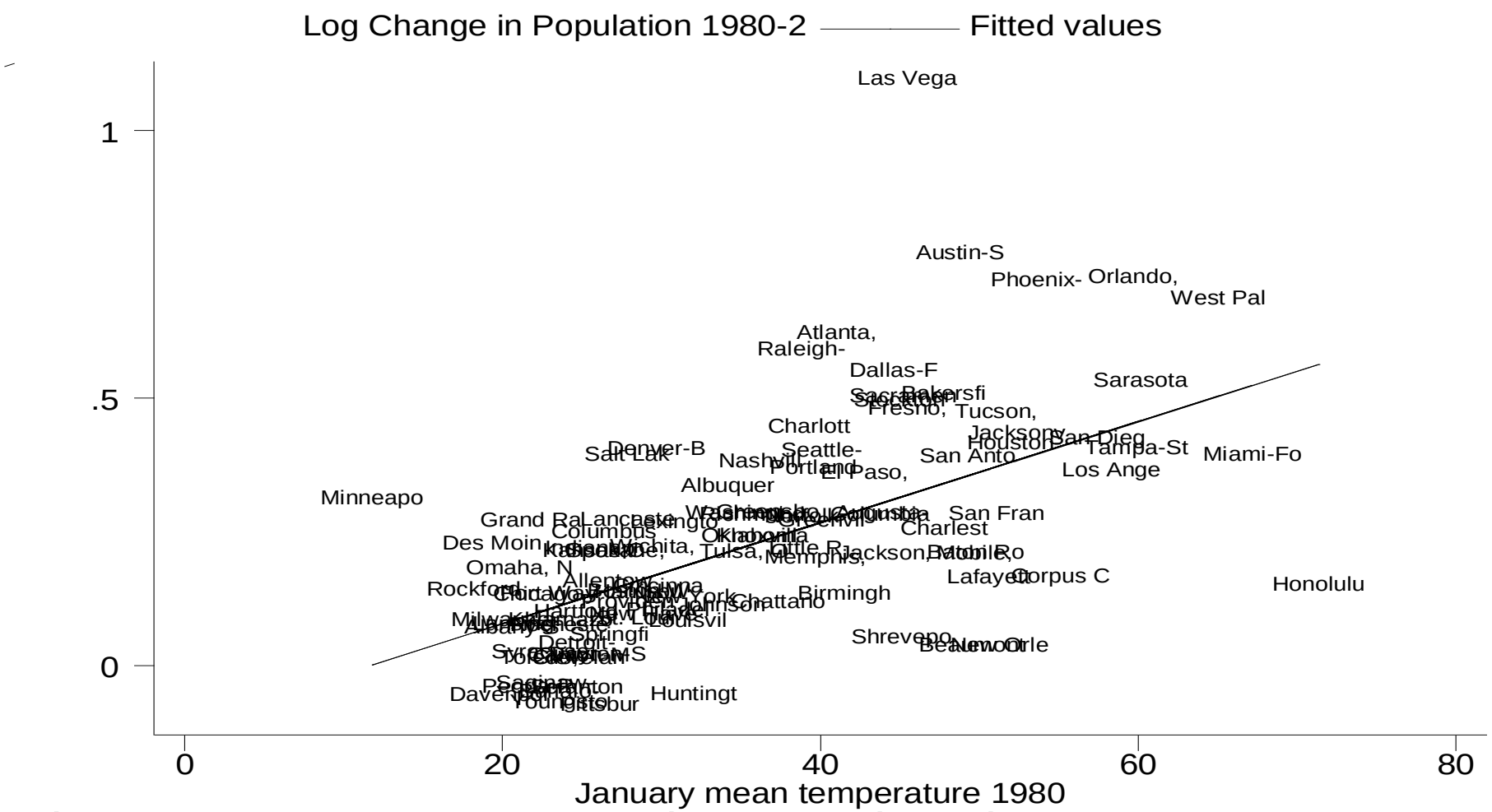


Figure 24: 1980-2000 Population Growth and Mean January Tmp.

Highways and Urban Change

- Highway miles are highly correlated with metropolitan area growth and income growth (Duranton and Turner)
  - Security-based highway plan as instrument
- Also associated with suburbanization within the metropolitan area (Baum-Snow)
  - also uses different instruments
- It is alleged that airports are important too, but the evidence is less clear.

Population Growth in the Northeast and Midwest

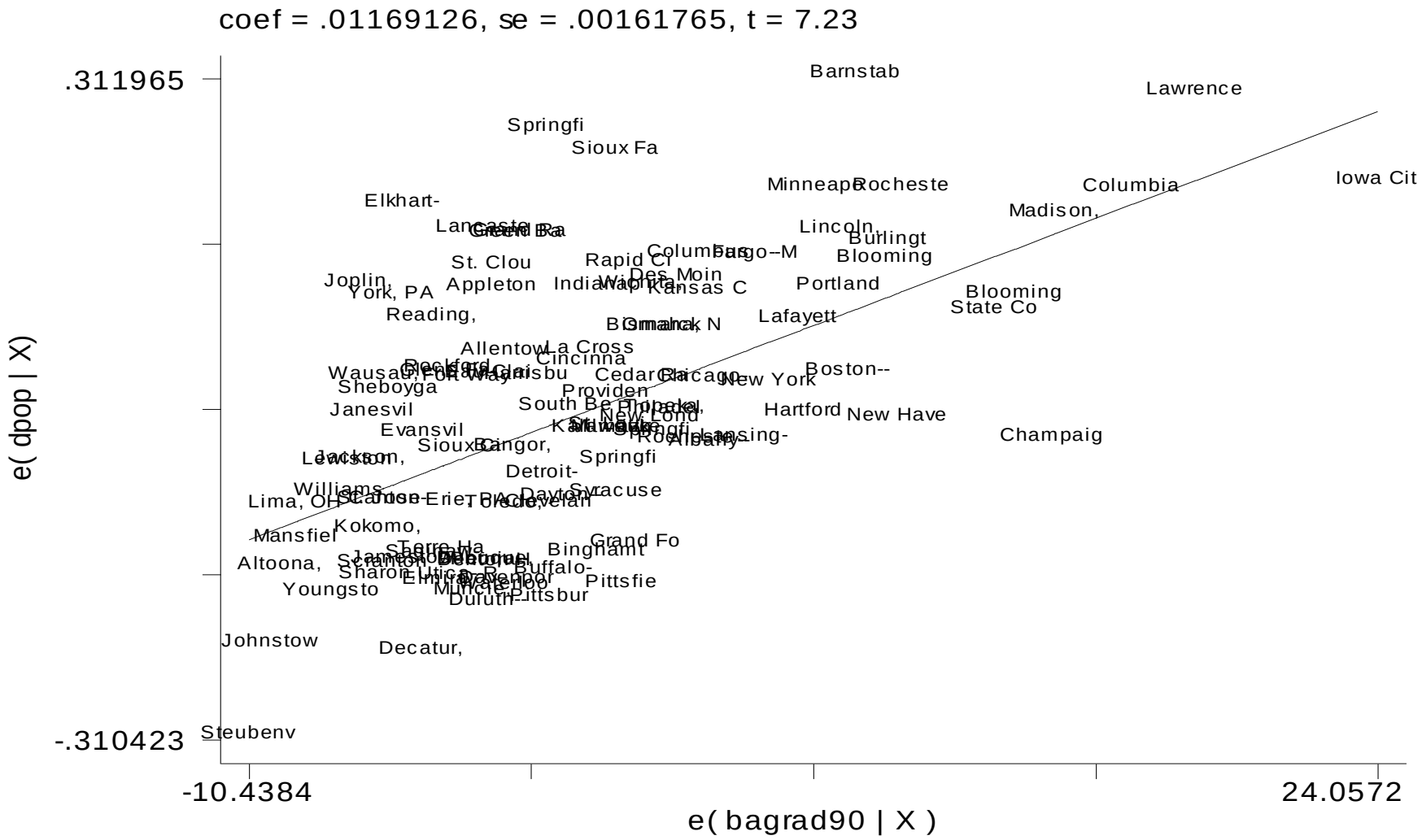
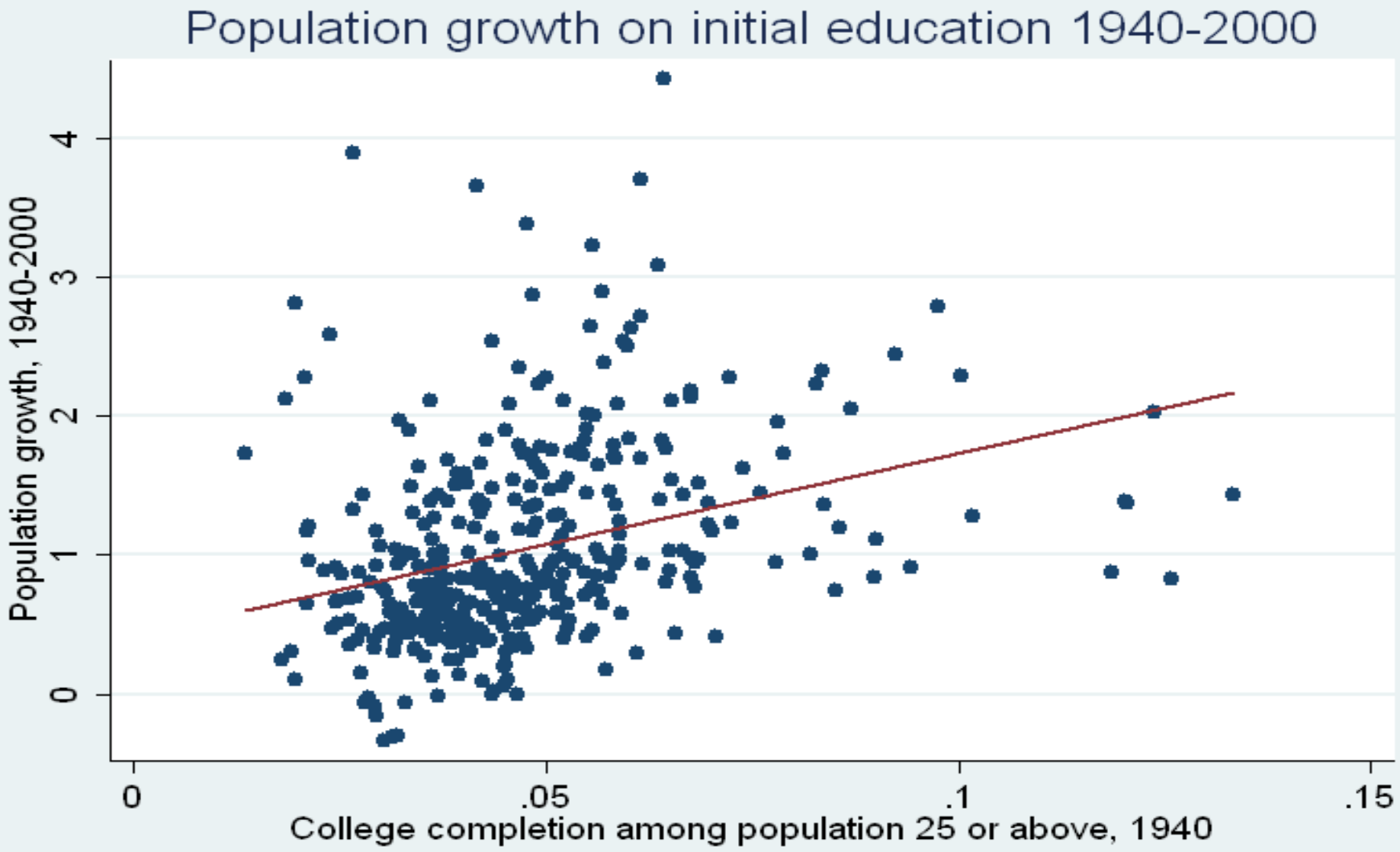


Figure 16


Population growth on initial education 1940-2000
Population growth, 1940-2000
0
1
2
3
4
0
.05
.1
.15
College completion among population 25 or above, 1940


Change Income 1980-2000
Fitted values
.6
.4
.2
0
.02
.04
.06
.08
.1
1980 Share of Skilled Workers
Austin-S
San Fran
Boston-Q
San Jose
Portland
Newark-U
Atlanta-
Charlott
Albany-S
Washingt
Hartford
Seattle-
Dallas-P
Kansas C
Chicago-
Phoenix
Wichita, Albuquer
Houston-
Los Ange
Oklahoma
Canton-M
Gary, IN
El Paso,

Figure 5

Figure 15

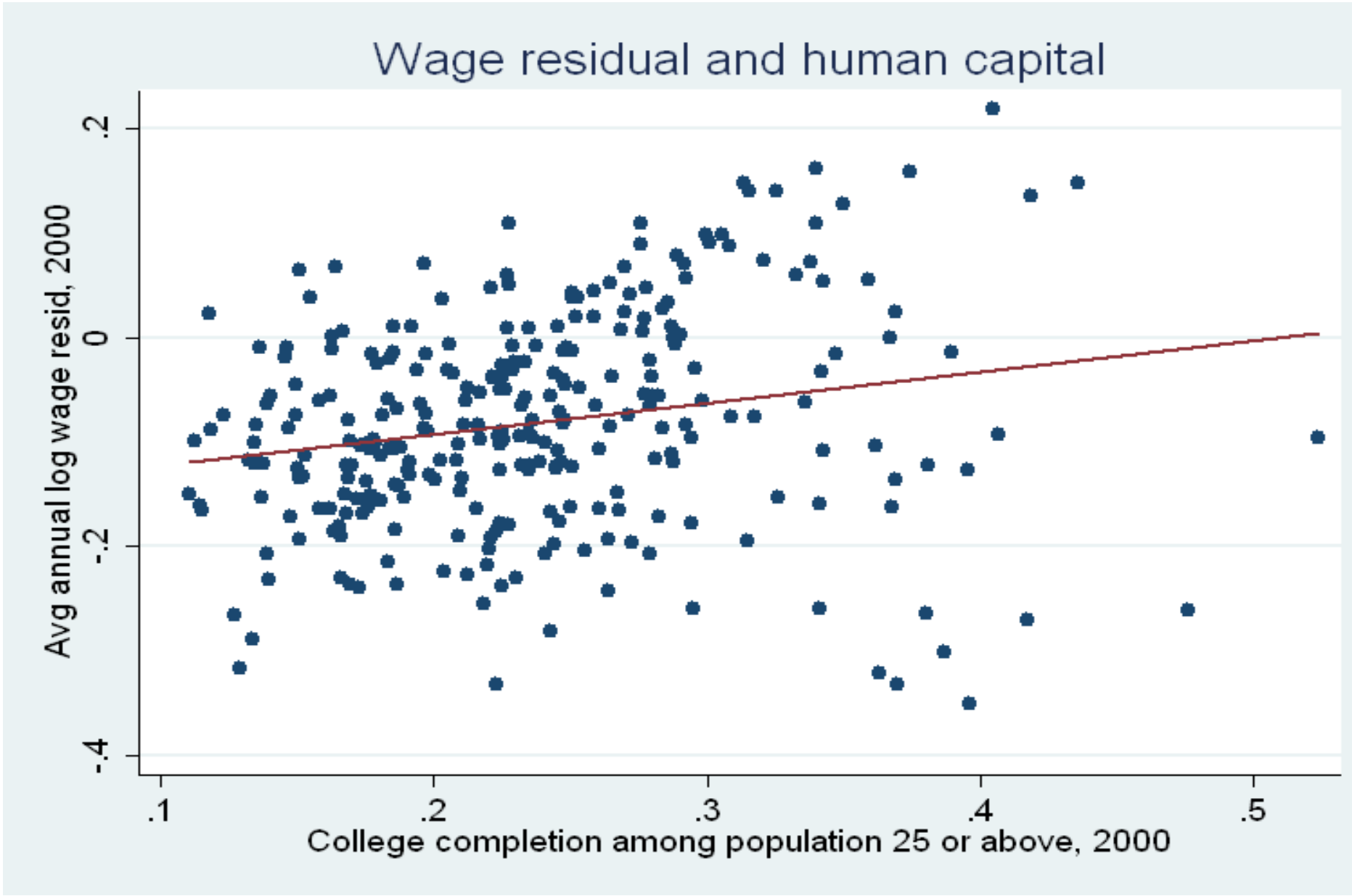
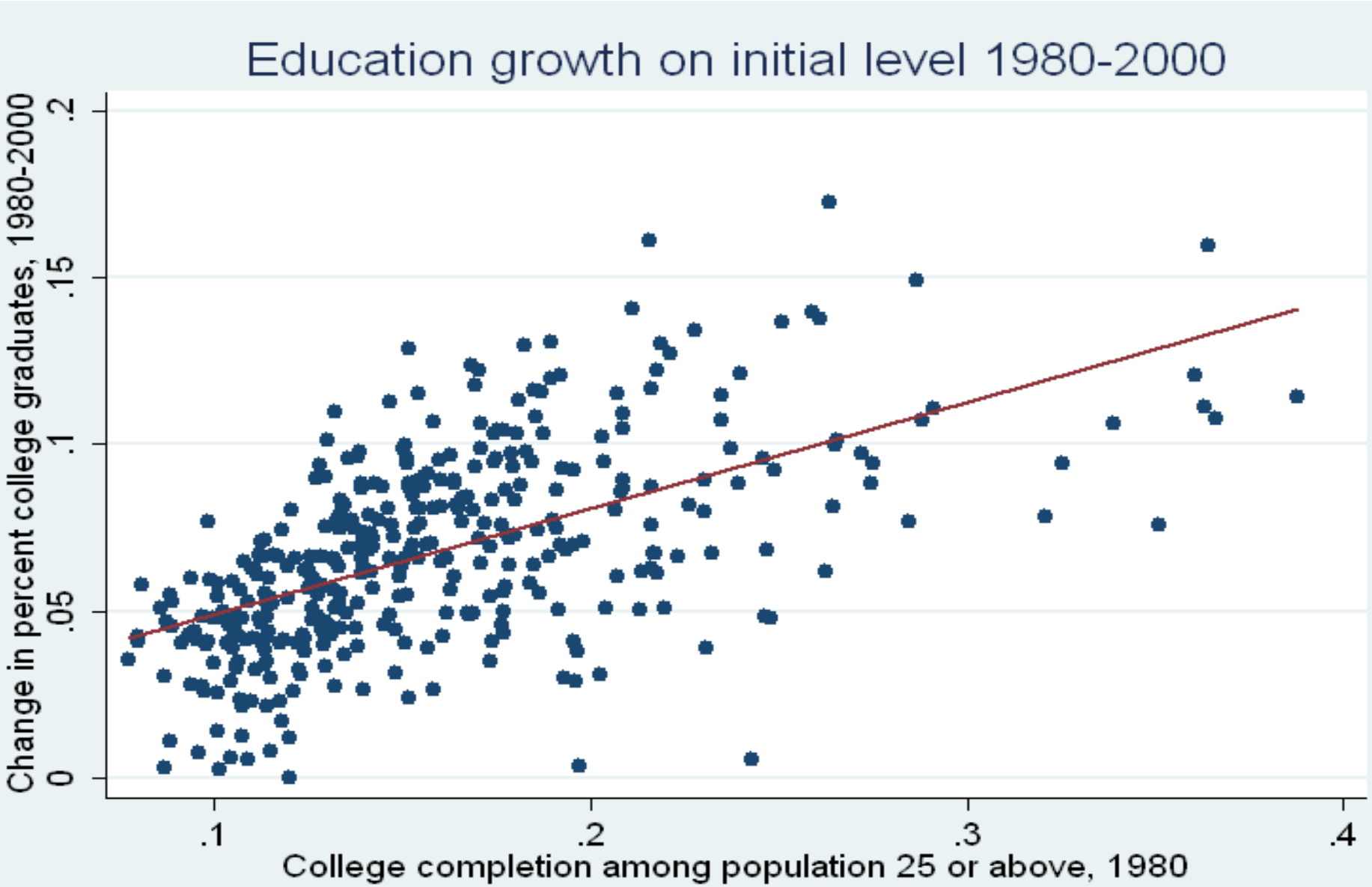

Wage residual and human capital
Avg annual log wage resid, 2000
.2
0
-.2
-.4
.1
.2
.3
.4
.5
College completion among population 25 or above, 2000

Figure 17


Education growth on initial level 1980-2000
Change in percent college graduates, 1980-2000
0
.05
.1
.15
.2
.1
.2
.3
.4
College completion among population 25 or above, 1980

Human Capital and Urban Success

- Rauch (1993), Moretti (2004), robust correlation between area skills and residualized income, also growth.
- Is it reflecting omitted individual h.c.?
- Is it reflecting the endogenous location of high skilled people in more productive areas?
- Instrument using old colleges or congregationalists.

What is Place-Making?

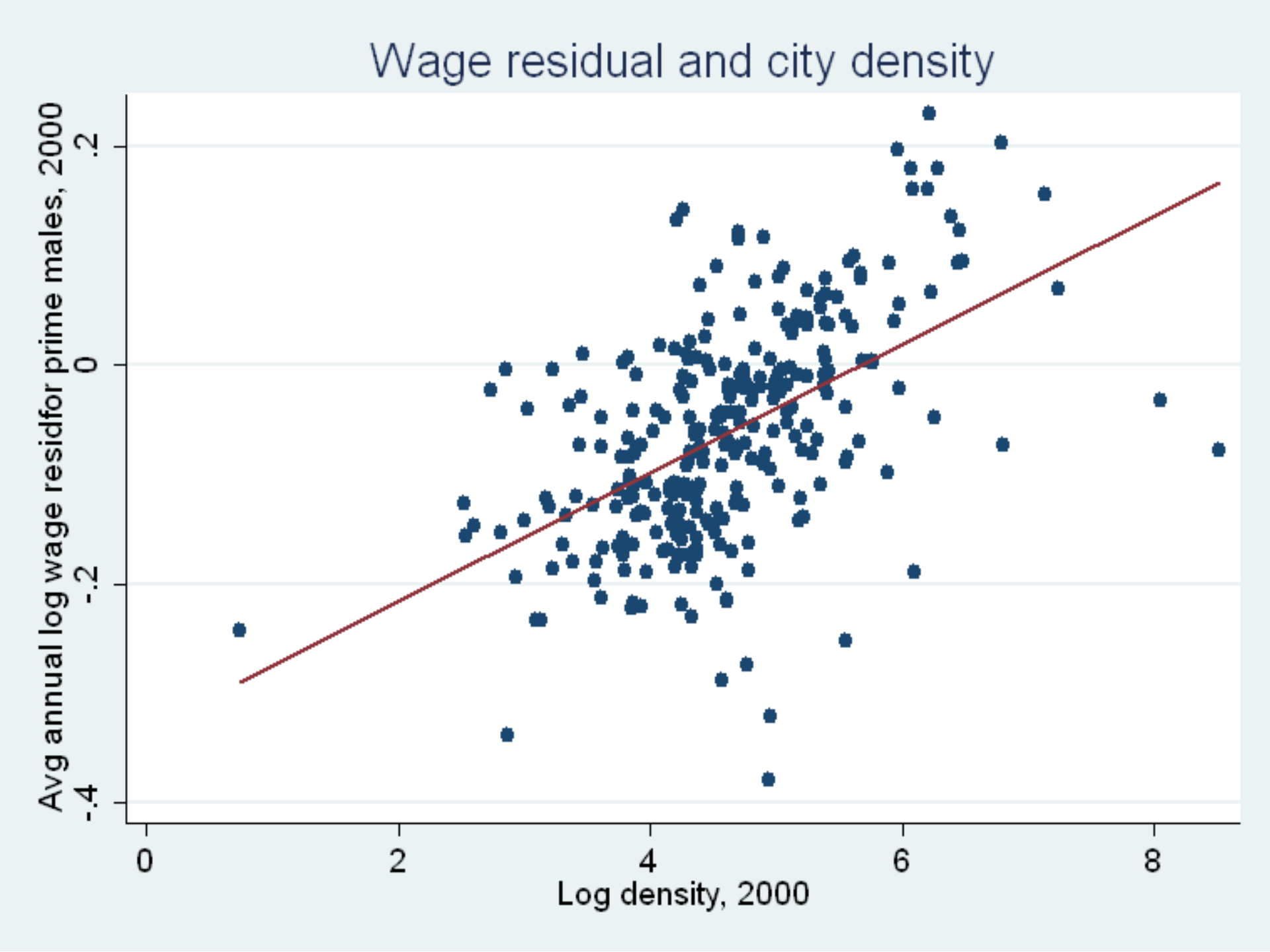
- Policies that intend to increase the well-being of a particular area, by moving resources or people from one place to another.
  - Spending on infrastructure, especially housing and transport,
  - Regional policies (Appalachia)
  - Urban renewal and enterprise zones
- We discuss these from a national perspective (local leaders always like place-making).
- An area where the ratio of policy discussion to scientific knowledge is extremely high.

The Usual Debate

- Economists start talking about the government's role is about helping poor people not poor places, and throwing out examples where spending on place does little to help the people living there.
- Non-economists correctly point out that much of our welfare does depend on our place, and that there are plenty of externalities.

The Case for Place-Making

- Many economists (authors included) believe in local externalities.
- Agglomeration economies– where productivity increases with density– are one example.
  - Price (wage) and quantity (concentration) data
- Human capital spillovers– where people become more productive surrounded by skilled people.
- Dynamic vs. static effects (wages vs. growth)
- These externalities would mean that the decentralized equilibrium is not optimal.


Wage residual and city density
Avg annual log wage residfor prime males, 2000
.2
0
-.2
-.4
0
2
4
6
8
Log density, 2000

Moving to Non-Linear Agglomeration

- Agglomeration economies, or human capital externalities, alone don't make the case for place-making.
- The agglomeration economies need to be non-linear, at least until we are moving everyone into London.
- One area's loss is another area's gain– we need to know not just that agglomeration economies exist but also their form.

Table 2. Regressions of Wages on Metropolitan-Area Population and Density[a]

	Regression				
Independent variable	*2-1*	*2-2*	*2-3*	*2-4*	*2-5*[b]
Log of population in 2000	0.041		0.023		0.089
	(0.009)		(0.010)		(0.037)
Log of population in 2000, below-median subsample		0.076		0.057	
		(0.029)		(0.029)	
Log of population in 2000, above-median subsample		0.038		0.020	
		(0.012)		(0.013)	
Log of population density, 2000			0.029		
			(0.015)		
Log of density in 2000, below-median subsample				0.041	
				(0.017)	
Log of density in 2000, above-median subsample				0.027	
				(0.020)	
No. of observations	1,591,140	1,591,140	1,591,140	1,591,140	1,282,116
No. of MSAs	283	283	283	283	210
R^2	0.22	0.22	0.22	0.22	

Source: Authors' regressions.

a. The dependent variable is the logarithm of the individual wage. The regression method is ordinary least squares except where noted otherwise. Only fully employed men aged 25 to 55 are included in the sample. All regressions include individual controls for age and education. Individual-level wage data are from the U.S. Census Public Use Microdata Sample, as described in appendix A. Metropolitan-area covariates are from the U.S. Census Bureau as described in appendix A. Units of observation are metropolitan statistical areas (MSAs) presented under the 1999 definitions, using primary rather than consolidated MSAs where applicable and New England county metropolitan areas where applicable. Standard errors (in parentheses) are clustered by MSA.

b. Instrumental variables regression using the logarithm of population in 1850 in place of log of population in 2000.

Making Sense of Spatial Data

- The spatial equilibrium lies at the core of urban and regional economics:

  U(Wages,Prices,Amenities)=Constant.

  (20 percent cross-county migration rates over 5 years)
- To explain wages, prices and population, you need to bring in two other conditions:
- Firms must be indifferent over hiring.
- Builders must be indifferent about building.

Figure 2. House Prices and Income per Capita[a]

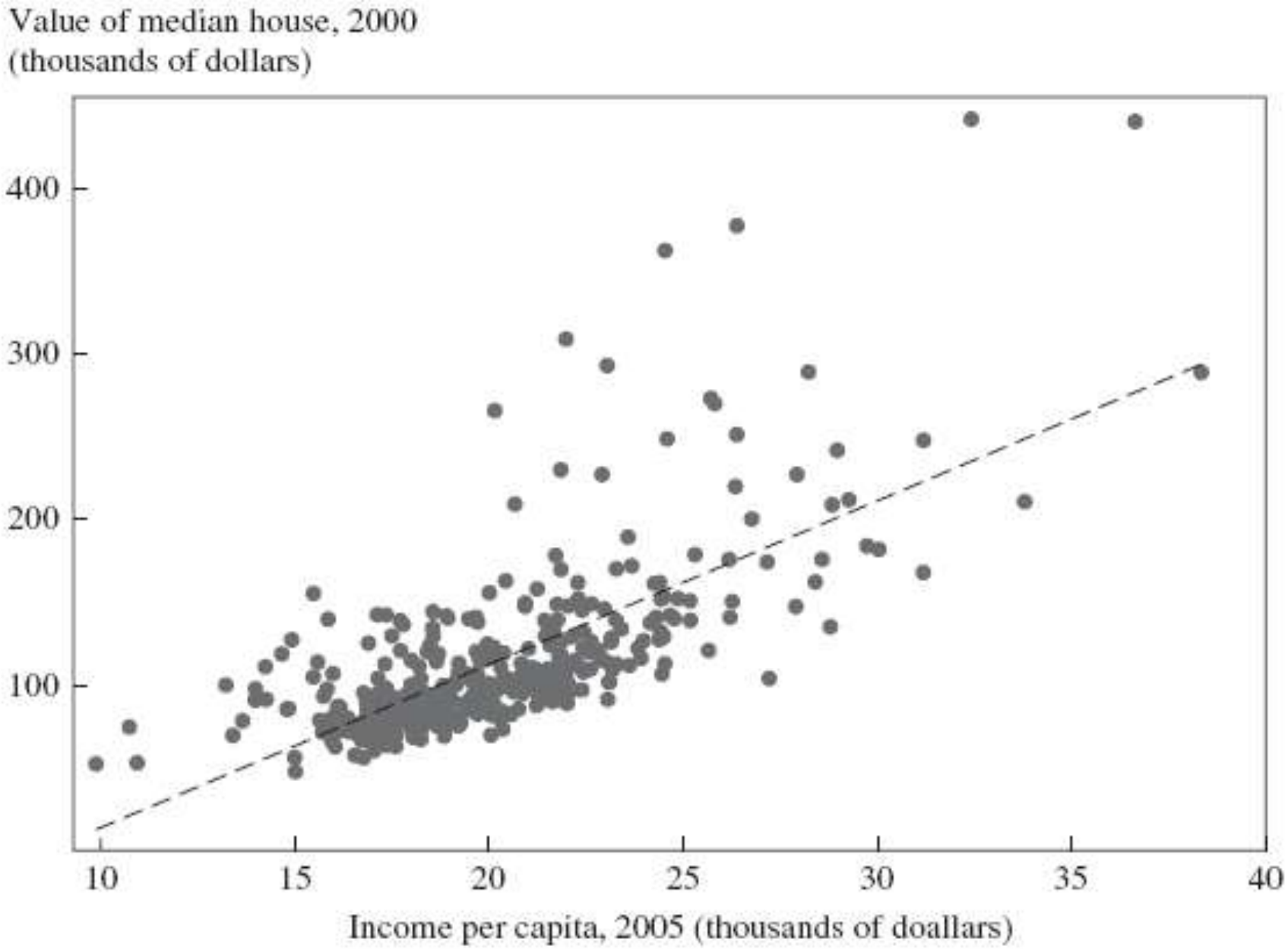


Figure 7

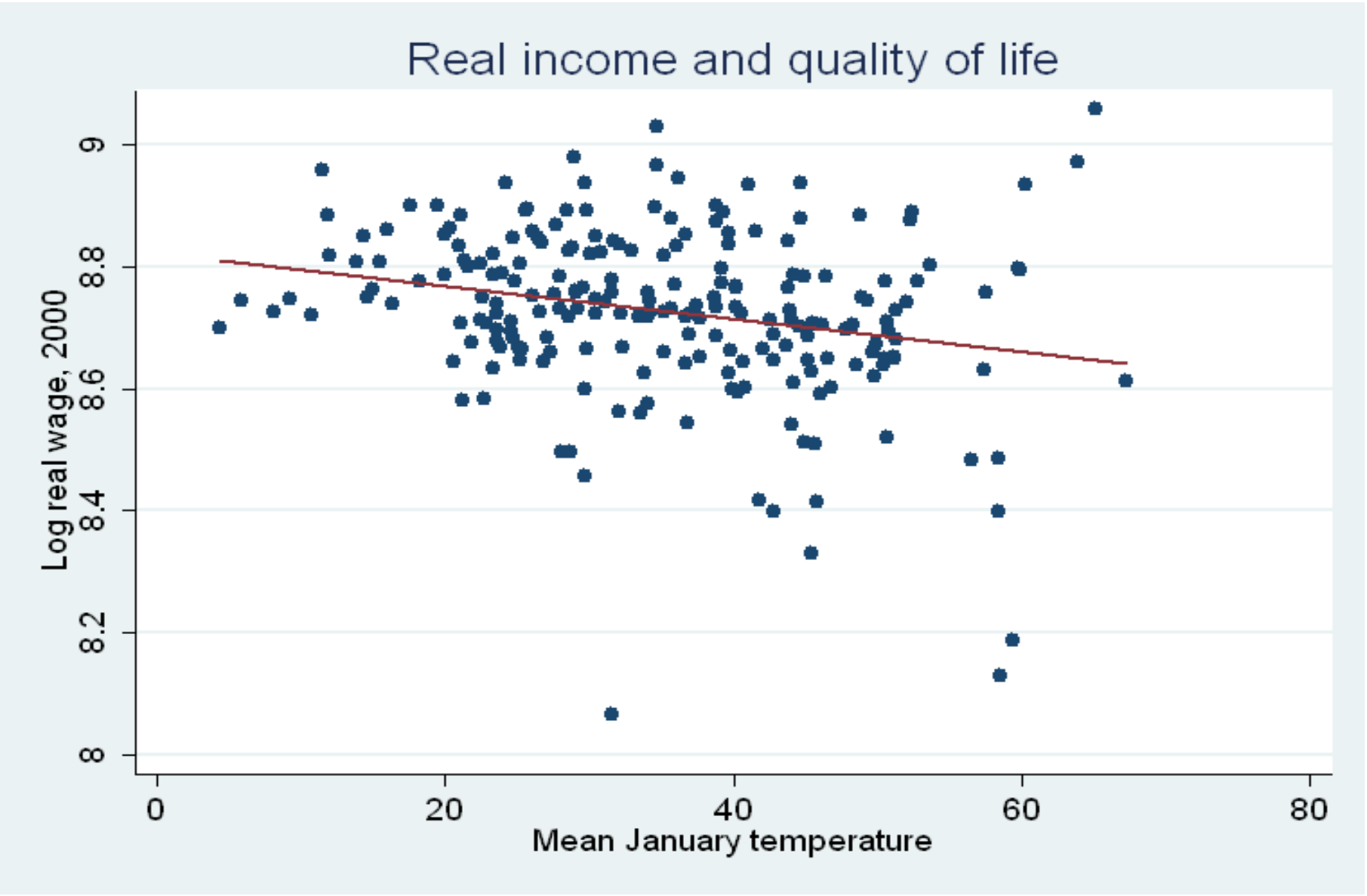
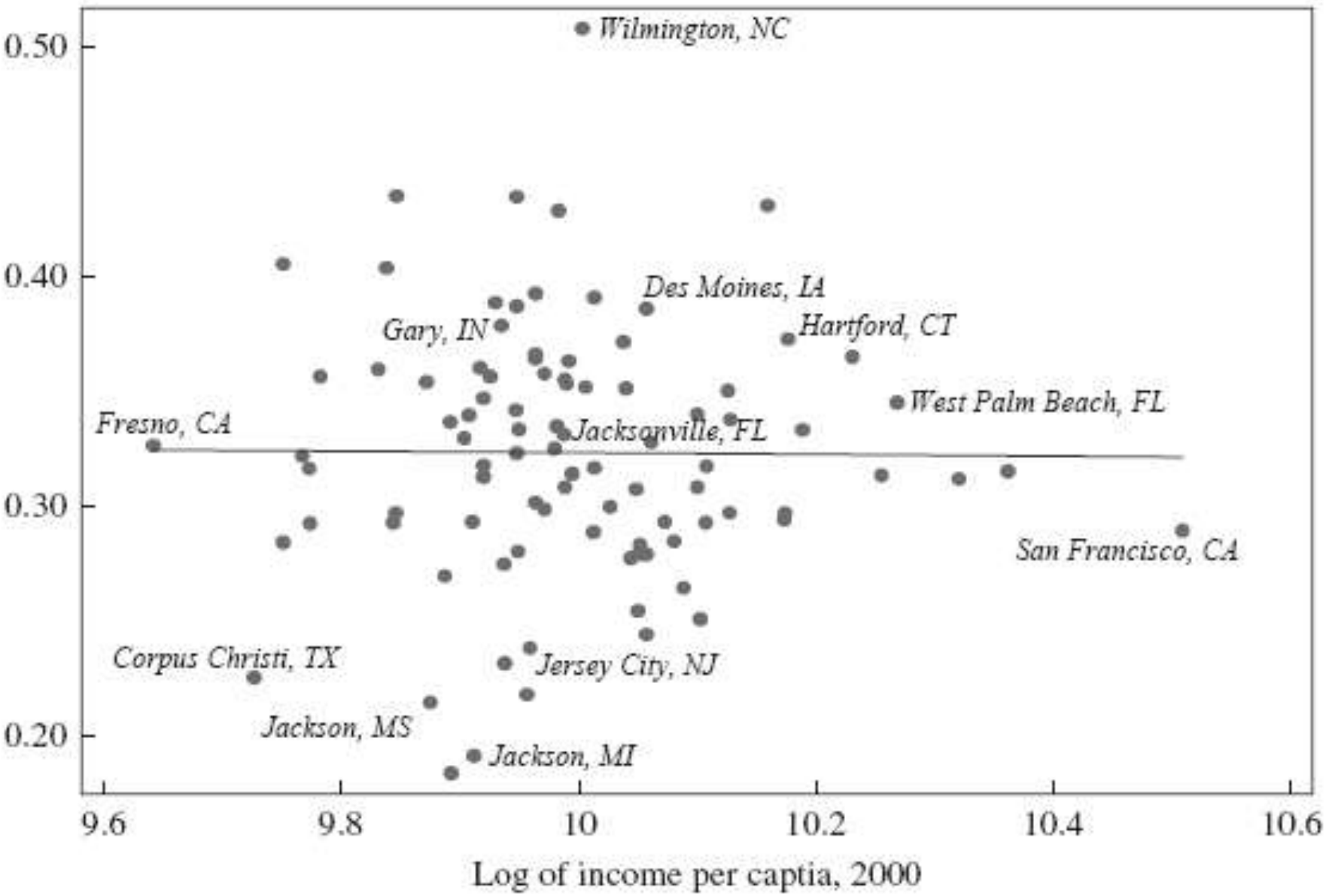

Real income and quality of life
Log real wage, 2000
8
8.2
8.4
8.6
8.8
9
0
20
40
60
80
Mean January temperature

Figure 6. Reported Happiness and Income per Capita[a]



Implications of Spatial Equilibrium

- Regional income inequalities don't imply welfare inequalities.
- Exogenous changes will impact population, income and housing prices in often counter-intuitive ways (i.e. declining real wages can be good).
- Differences in productivity, amenities and housing supply drive urban population, income and housing prices.

Returning to Agglomeration

- In the spatial equilibrium model, agglomeration economies mean that productivity (think A in a Solow) is rising with city size.
  - Agglomeration can also impact consumption
- The spatial equilibrium view makes it hard to just regress wages on population.
- Both will reflect regional advantages in productivity and/or amenities.
  - Productivity-related instruments don't work

A Simple Calculation

- Log(Wage)=a(i)+b*Log(N)
- Utility=Log(Wage)+u(i)-d*Log(N)
- The term “b” is the agglomeration economy
- The term “d” is congestion in utility possibly reflecting housing prices.
- a(i) is area specific productivity
- u(i) is area specific amenities

The Spatial Equilibrium

- The basic starting point for urban economic is the spatial equilibrium assumption. In this case that means:
- $Log(N)=1/d*(Log(Wage)+u(i))$
- Solving out gives us that:
- $Log(N)= (a(i)+u(i))/(d-b)$
- $Log(Wage)=d*a(i)/(d-b)+b*u(i)/(d-b)$

Regressing Wages on Population

- Standard agglomeration estimates yield:

$$\frac{d\mathrm{Var}(a)+b\mathrm{Var}(u)+(b+d)\mathrm{Cov}(a,u)}{\mathrm{Var}(a)+\mathrm{Var}(u)+2\mathrm{Cov}(a,u)}$$

- If Cov(a,u) equals zero then the estimated effect is a weighted average of b and d.
- If we instrument for population using shocks to u(i), then we recover the agglomeration effect “b”, but …

Instruments and Agglomeration

- The spatial equilibrium model suggests that if variation in population density is coming from productivity then the estimates don't measure agglomeration.
- If variation is coming from amenities or housing supply, then the
  - Estimated Coefficient x (labor share + non-trade capital share) + non-traded capital share = Agglomeration Elasticity.

Agglomeration Evidence Overview

- OLS effects are quite strong and not the result of omitted human capital characteristics
- IV effects using historical city size are just as strong (Ciccone and Hall)
- IV effects using weather don't show much.
- But there is also strong evidence on clustering of people and firms (use quantities and prices).

Population growth in 1990s × year 2000 dummy	0.200	0.004	0.166	–0.020
	(0.044)	(0.098)	(0.088)	(0.121)
Above-median population dummy × year 2000 dummy			0.006	
			(0.017)	
Population growth in 1990s × above-median population dummy × year 2000 dummy			–0.165	
			(0.133)	
Above-median centralization[c] dummy × year 2000 dummy				–0.038
				(0.022)
Population growth in 1990s × above-median centralization dummy × year 2000 dummy				0.216
				(0.163)
Dummy for bottom quartile of MSA population growth, 1970–90 × year 2000 dummy				
Log of population in 2000 × dummy for bottom quartile of MSA population growth, 1970–90 × year 2000 dummy				
No. of observations	2,950,850	2,950,850	2,950,850	2,490,733
No. of MSAs	287	287	287	229

Table 5: Urban disamenities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log average commute	Log average commute	Log particulates	Log particulates	Log murder rate	Log murder rate	Log real wage	Log real wage
Log population, 2000	0.120	0.056	0.142	0.122	0.222	0.411	0.03	0.051
	[0.0115]	[0.0163]	[0.0561]	[0.0858]	[0.1455]	[0.2445]	[0.02]	[0.025]
Log population X above median, 2000	-0.003		0.001		0.004		-0.0004	
	[0.0018]		[0.0125]		[0.0183]		[0.0025]	
Percent of employment within 5 miles of CBD		-1.073		0.662		0.650		1.74
		[0.4980]		[2.7159]		[6.9016]		[0.76]
Log population 2000 X % within 5 mi of CBD		0.069		-0.122		-0.010		-0.15
		[0.0397]		[0.1968]		[0.5605]		[0.06]
City size in bottom quartile, 2000		-0.122		0.827		9.852		-1.27
		[0.9059]		[5.2436]		[8.6832]		[1.51]
Log population 2000 X in bottom quartile		0.013		-0.056		-0.835		0.10
		[0.0773]		[0.4487]		[0.7396]		[0.13]
N	318	248	40	37	153	126	219	185
R^2	0.480	0.570	0.360	0.540	0.070	0.100	0.05	0.08

A brief overview of place-making enterprises in the US

- Appalachian Regional Commission
  - Correlated with growth in the 70s but not longer term (comparison group is crucial– Isserman and Rephann)
- Urban Renewal Dollars
  - Spending on housing where housing prices are low
- Model Cities program
  - We find no positive effects of either that are reliable
  - Evaluation of these policies will never work– they are small programs and they are alleged to impact overall cities where there is far too much.
- Enterprise Zones.
  - A larger literature (Busso and Kline) effective but expensive (100k per job)

Table 7. Regressions Estimating Impact of the Appalachian Regional Commission[a]

	Dependent variable			
	Population growth		*Growth in income per capita*	
Independent variable	*1970–80*	*1970–2000*	*1970–80*	*1970–2000*
Dummy for county in ARC coverage area	0.037	–0.002	0.004	–0.029
	(0.008)	(0.020)	(0.005)	(0.008)
Log of initial population	–0.018	–0.036		
	(0.004)	(0.010)		
Log of initial income per capita			–0.323	–0.406
			(0.011)	(0.016)
Constant	0.299	0.637	3.418	5.172
	(0.038)	(0.099)	(0.082)	(0.123)
Adjusted R^2	0.051	0.015	0.512	0.420

Source: Authors' regressions.

a. Units of observation ($N = 898$) are counties. Income and population data are from the U.S. Census Bureau, as described in appendix A. Standard errors are in parentheses.

Table 8. Regressions Estimating Impact of Urban Renewal[a]

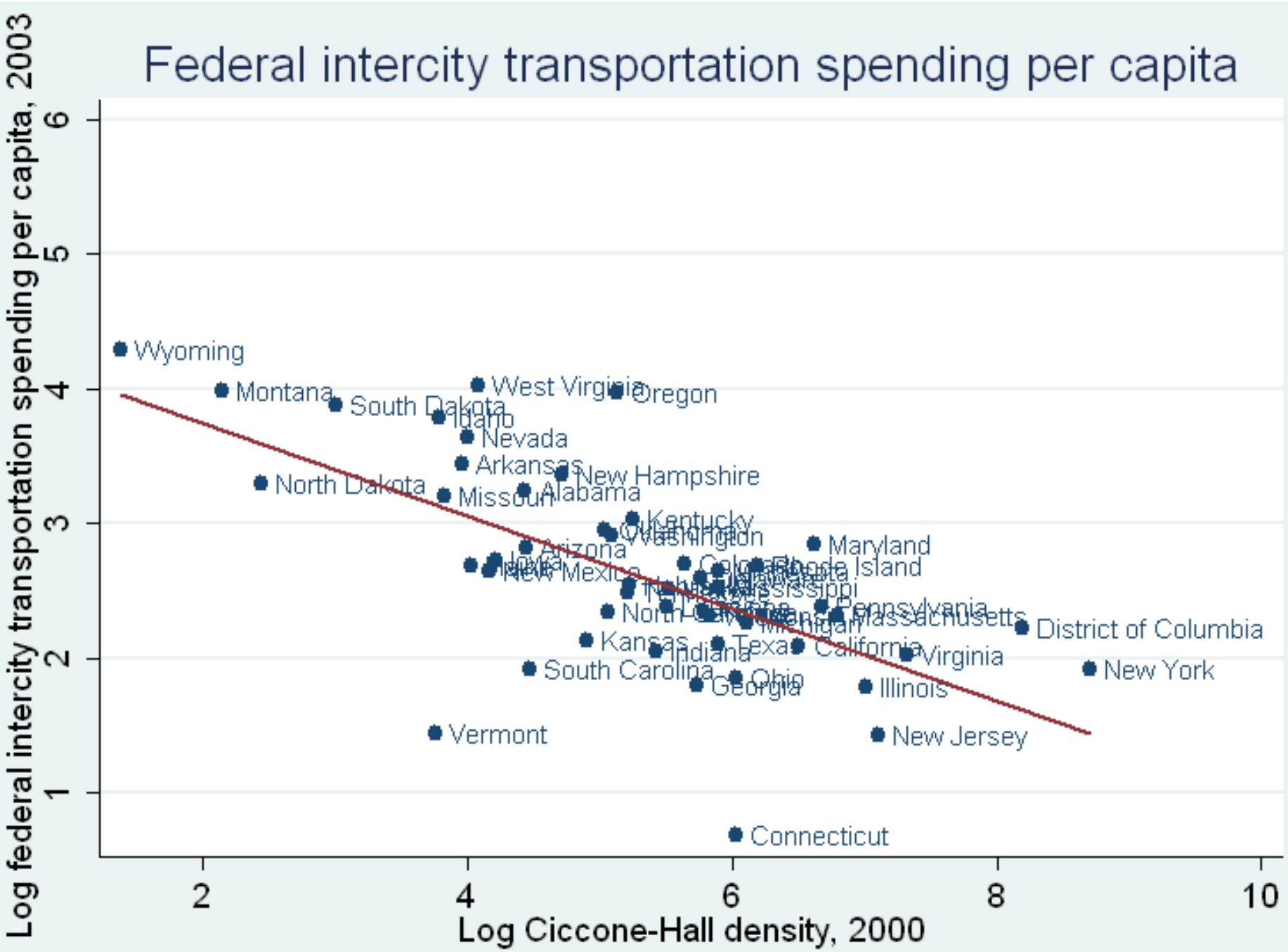
	Dependent variable			
	Growth from 1960 to 1970		*Growth from 1970 to 2000*	
Independent variable	*In population*	*In income per capita*	*In population*	*In income per capita*
Urban renewal spending per capita (dollars)	0.0022	0.0004		
	(0.0014)	(0.0006)		
Dummy for Model Cities participant			–0.051	0.023
			(0.063)	(0.016)
Log of initial population	–0.027		–0.053	
	(0.051)		(0.021)	
Log of initial income per capita		–0.459		–0.177
		(0.152)		(0.035)
Constant	0.054	5.92	1.06	3.34
	(0.768)	(1.17)	(0.26)	(0.28)
No. of observations	21	21	318	318
Adjusted R^2	0.20	0.45	0.04	0.07

Source: Authors' regressions.

a. Units of observation are metropolitan statistical areas under the 1999 definitions (primary rather than consolidated MSAs where applicable, New England county metropolitan areas where applicable). Income and population data are from the U.S. Census Bureau, as described in appendix A. Urban renewal spending per capita is from Staples (1970).

Evaluating Transport Policy

- Without place-making, evaluation would mean looking at standard consumer surplus.
- But these things are often sold as saving particular areas or place-making?
- “A Monorail with save Detroit”– infrastructure creates place-based externalities
- Does this make sense?


Federal intercity transportation spending per capita
Log federal intercity transportation spending per capita, 2003
1
2
3
4
5
6
Log Ciccone-Hall density, 2000
2
4
6
8
10
Wyoming
Montana
South Dakota
West Virginia
Oregon
Idaho
Nevada
Arkansas
New Hampshire
North Dakota
Missouri
Alabama
Kentucky
Maryland
Arizona
Rhode Island
Mississippi
Pennsylvania
Massachusetts
District of Columbia
Kansas
Texas
California
Virginia
New York
South Carolina
Ohio
Georgia
Illinois
Vermont
New Jersey
Connecticut

Failures and Successes

- Most governmental led attempts at rebuilding places do not have an observable effect.
- Foolish focus on infrastructure in places that already had plenty of it.
- Human capital is the best predictor of urban reinvention.
- Dense places always had innovation but now it is the main engine of growth.

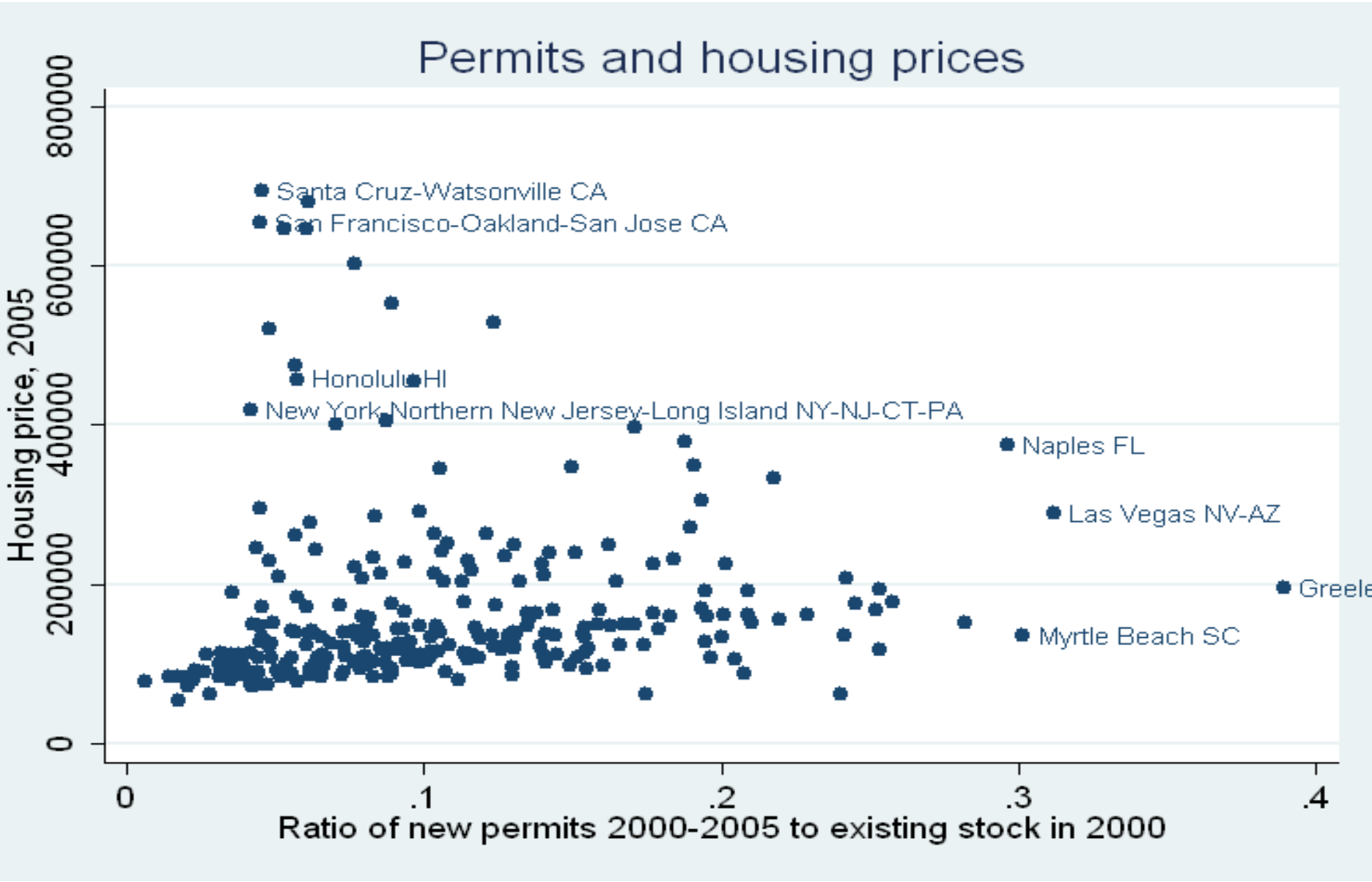
Implications for Policy depends on where you sit

- If you are a mayor, you surely want to attract skilled people and industries.
  - Quality of life policies
- If you are the minister of education, you want to subsidize schools.
- But it is less clear that there is any reason to redistribute skilled people across space or particuarly subsidize skills in declining regions.
- Again non-linearities matter and we can’t measure those.
- Equity concerns might push you towards increasing skills in poorer areas– but the spatial equilibrium pushes back.
- The U.S. dichotomy between local and central leadership doesn’t work so well elsewhere.

A Different Approach

- Focus on clear distortions that exist and create a spatially balanced playing field:
- Distortion # 1: Paying for the poor in urban areas (increases with federalism)
- Distortion # 2: Local land use restrictions that bar growth
- Distortion # 3: Failing to charge for carbon emissions.

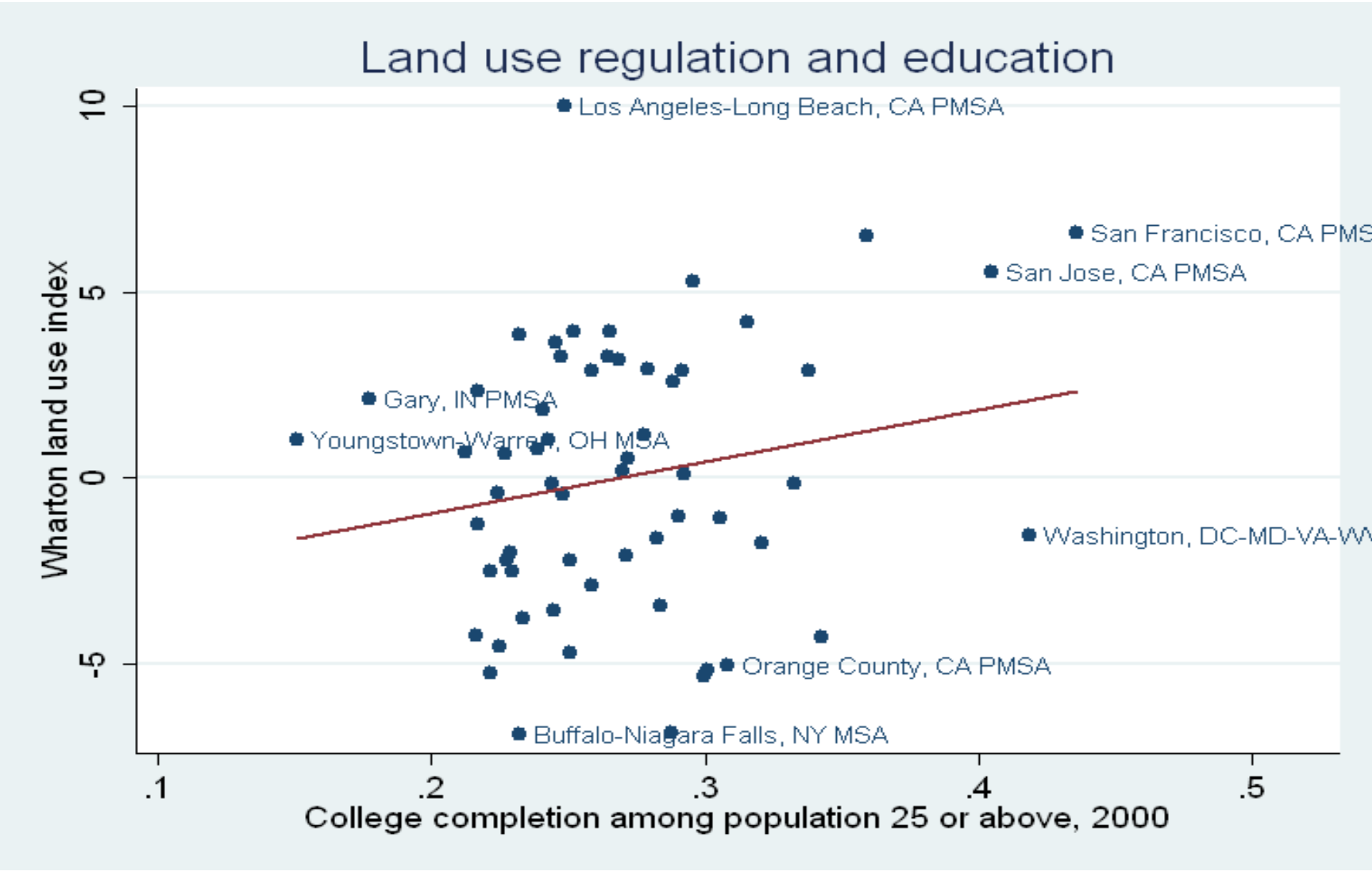
Figure 18


Permits and housing prices
Housing price, 2005
0
200000
400000
600000
800000
Santa Cruz-Watsonville CA
San Francisco-Oakland-San Jose CA
Honolulu HI
New York-Northern New Jersey-Long Island NY-NJ-CT-PA
Naples FL
Las Vegas NV-AZ
Myrtle Beach SC
0
.1
.2
.3
.4
Ratio of new permits 2000-2005 to existing stock in 2000

Economics of Land Use Restrictions

- Many localities are involved in actively restricting new entry through land use.
  - Rising numbers of various controls
  - Pattern of rising prices and falling quanities (also shorter buildings and larger lots)
- A growing literature showing both direct effects of land use restrictions on prices and quantities.
- These can be optimal for local owners, but not welfare maximizing (Coasian failure)
- Are they internalizing externalities well?

Figure 21


Land use regulation and education
Los Angeles-Long Beach, CA PMSA
San Francisco, CA PMS
San Jose, CA PMSA
Gary, IN PMSA
Youngstown-Warren, OH MSA
Washington, DC-MD-VA-W
Orange County, CA PMSA
Buffalo-Niagara Falls, NY MSA
Wharton land use index
10
5
0
-5
.1
.2
.3
.4
.5
College completion among population 25 or above, 2000

Land Use Regulation and Energy

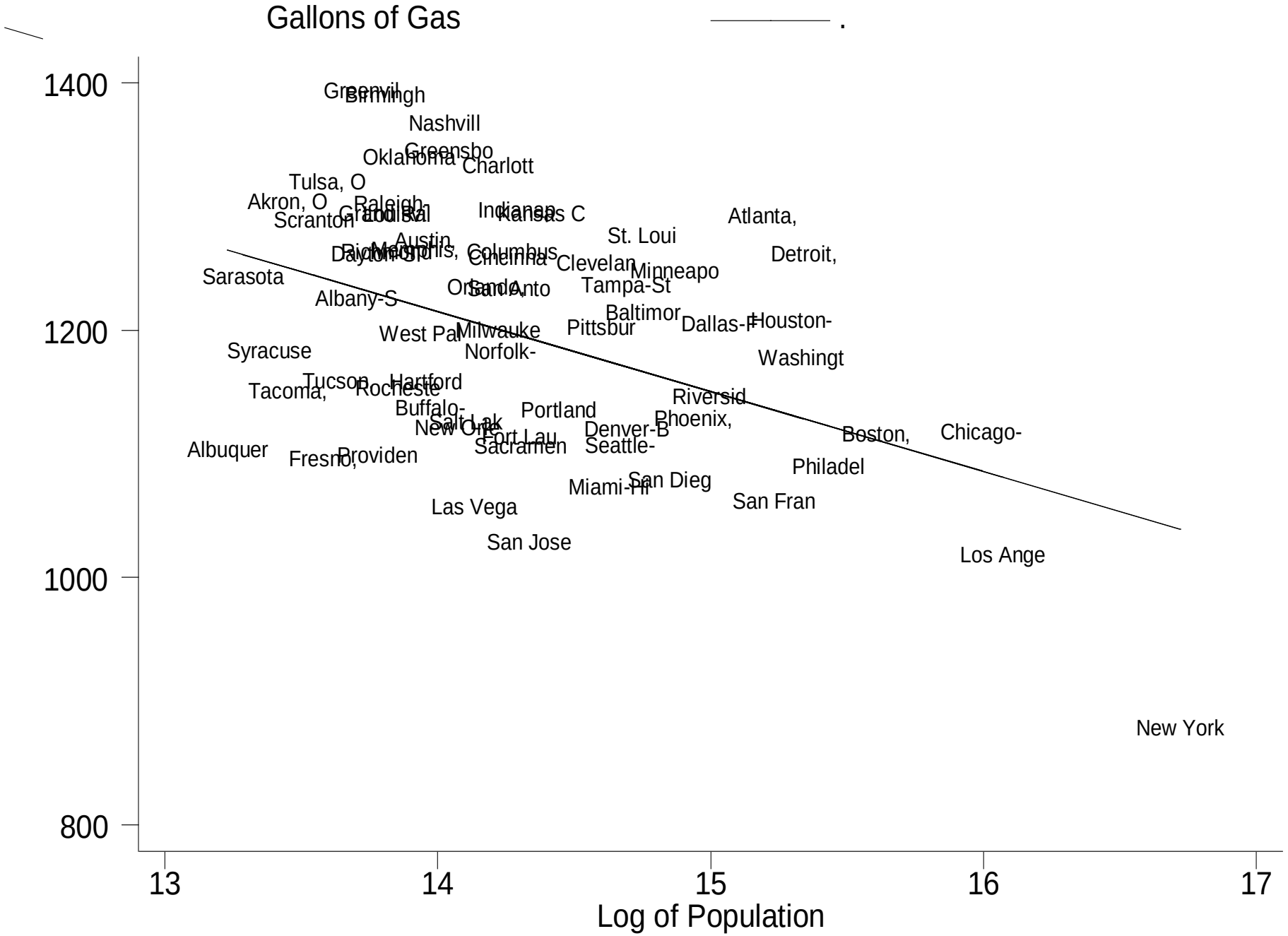
- The externality created by a new home is always relative to another area

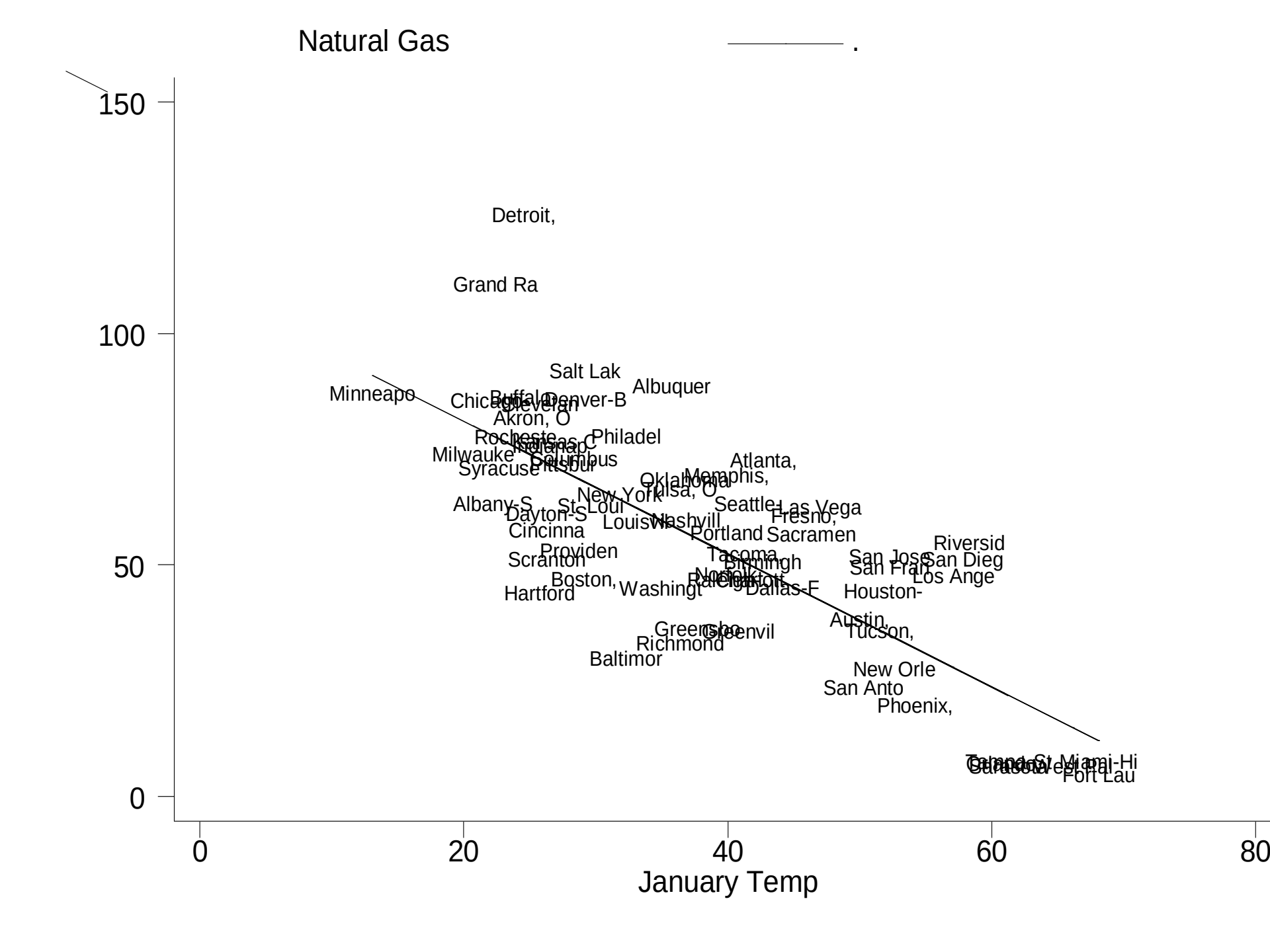
  (difference in energy use)*(energy externality-tax).

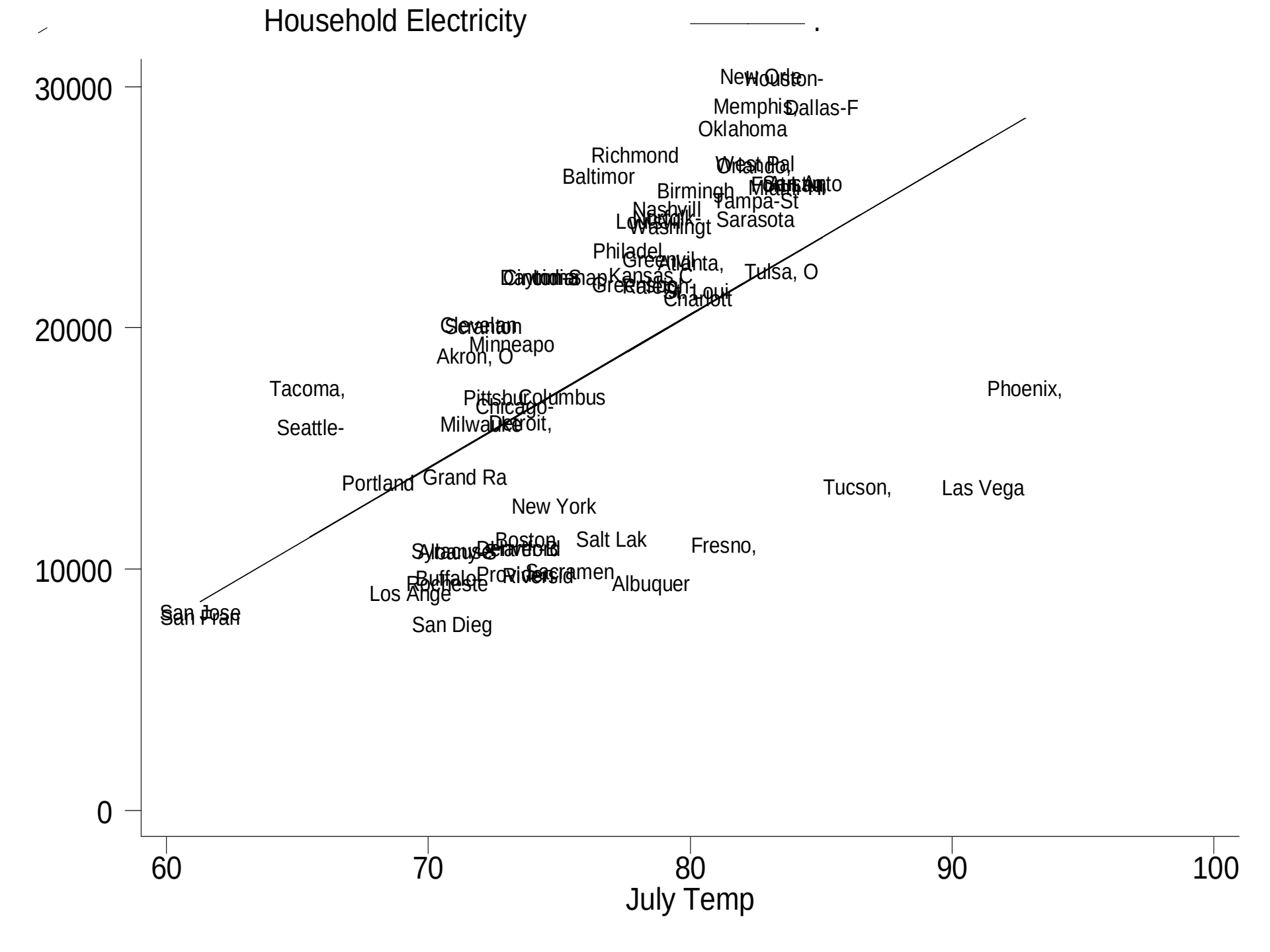
- If an area imposes a ban on local development, this is efficient if the area is the high energy user, but inefficient otherwise.
- Big stakes for China and India.

Sources of CO2 Emissions

- Private Gasoline Consumption (Cars)
  - Estimated for each tract and then weighted by new construction
- Public Transportation Emissions
  - Estimated MSA by MSA
- Home Electricity
  - Estimated by Census spending figures
- Home Heating: Natural Gas and Fuel Oil


Gallons of Gas
1400
1200
1000
800
13
14
15
16
17
Log of Population
Greenvil
Birmingh
Nashvill
Greensbo
Oklahoma C
Charlott
Tulsa, O
Akron, O
Raleigh
Scranton
Indianap
Kansas C
Atlanta,
St. Loui
Austin,
Columbus
Cincinna
Clevelan
Detroit,
Minneapo
Sarasota
Tampa-St
Albany-S
Baltimor
Houston-
Dallas-F
Pittsbur
West Pal
Milwauke
Syracuse
Norfolk-
Washingt
Tucson
Hartford
Tacoma,
Rocheste
Riversid
Buffalo-
Portland
Phoenix,
Denver-B
Boston,
Chicago-
Albuquer
Fresno,
Providen
Sacramen
Seattle-
Philadel
San Dieg
Miami-Fl
San Fran
Las Vega
San Jose
Los Ange
New York


Natural Gas
150
100
50
0
0
20
40
60
80
January Temp
Detroit,
Grand Ra
Salt Lak
Albuquer
Minneapo
Chicago
Buffalo
Denver-B
Cleveland
Akron, O
Philadel
Milwauke
Syracuse
Atlanta,
Memphis,
Albany-S
New York
Seattle
Las Vega
Dayton-S
Fresno,
Cincinna
Portland
Sacramen
Riversid
Providen
Tacoma
San Jose
San Dieg
Scranton
Birmingh
San Fran
Los Ange
Boston,
Hartford
Washingt
Dallas-F
Houston-
Austin,
Tucson,
Greensbo
Greenvil
Richmond
Baltimor
New Orle
San Anto
Phoenix,
Miami-Hi
Fort Lau


Household Electricity
30000
20000
10000
0
60
70
80
90
100
July Temp
Tacoma,
Seattle-
Portland
Grand Ra
San Jose
San Dieg
Los Ange
Minneapo
Akron, O
Columbus
Chicago-
Milwauke
New York
Boston,
Salt Lak
Fresno,
Albuquer
Tucson,
Las Vega
Phoenix,
Tulsa, O
Charlott
Richmond
Baltimor
Birmingh
Nashvill
Sarasota
Memphis
Oklahoma

A Few Caveats

- We are include anything about industry.
  - We have a workplace electricity survey that we can use.
- We will use a 43 dollar per CO2 ton cost; this is highly debatable (about ½ Stern Report).
- Scale it up or down as you like.
- Mistakes in the price index are a problem.
- Renters are still an estimate.

MSA	Driving Emissions (Lbs of CO2)	Public Trans. Emissions (Lbs of CO2)	Home Heating Emissions (Lbs of CO2)	Elec. (Megawatt Hrs)	NERC	CO2 Emissions Cost ($ per Year)
Los Angeles-Long Beach, CA	23,766	1,062	5,558	8.60	1,007	840
San Diego, CA	25,183	689	5,975	7.34	1,007	844
San Francisco-Oakland-Vallejo, CA	24,777	1,675	5,765	7.62	1,007	858
San Jose, CA	24,004	2,058	6,055	7.85	1,007	860
Sacramento, CA	25,827	458	6,636	9.50	1,007	913
Riverside-San Bernadino, CA	26,761	42	6,413	9.34	1,007	916
Fresno, CA	25,587	951	7,126	10.60	1,007	953
Tucson, AZ	27,062	616	4,106	13.02	1,007	965
Las Vegas, NV	24,667	0	7,347	12.97	1,007	969
Phoenix, AZ	26,339	75	2,168	17.04	1,007	983

MSA	Driving Emissions (Lbs of CO2)	Public Trans. Emissions (Lbs of CO2)	Home Heating Emissions (Lbs of CO2)	Elec. (Megawatt Hrs)	NERC	CO2 Emissions Cost ($ per Year)
Kansas City, MO-KS	30,235	644	9,042	14.01	1,561	1,328
Louisville, KY/IN	30,231	884	6,965	15.63	1,543	1,337
Atlanta, GA	30,192	1,121	8,555	15.20	1,472	1,338
Philadelphia, PA/NJ	25,426	3,993	10,831	14.16	1,614	1,357
Dallas-Fort Worth, TX	28,155	1,723	5,253	18.53	1,555	1,375
Birmingham, AL	32,491	227	5,920	17.21	1,472	1,376
Nashville, TN	31,959	473	7,006	16.69	1,472	1,376
Houston-Brazoria, TX	28,216	1,447	5,148	19.30	1,555	1,394
Oklahoma City, OK	31,312	332	8,058	16.94	1,649	1,454
Memphis, TN/AR/MS	29,547	1,073	8,166	19.63	1,472	1,455

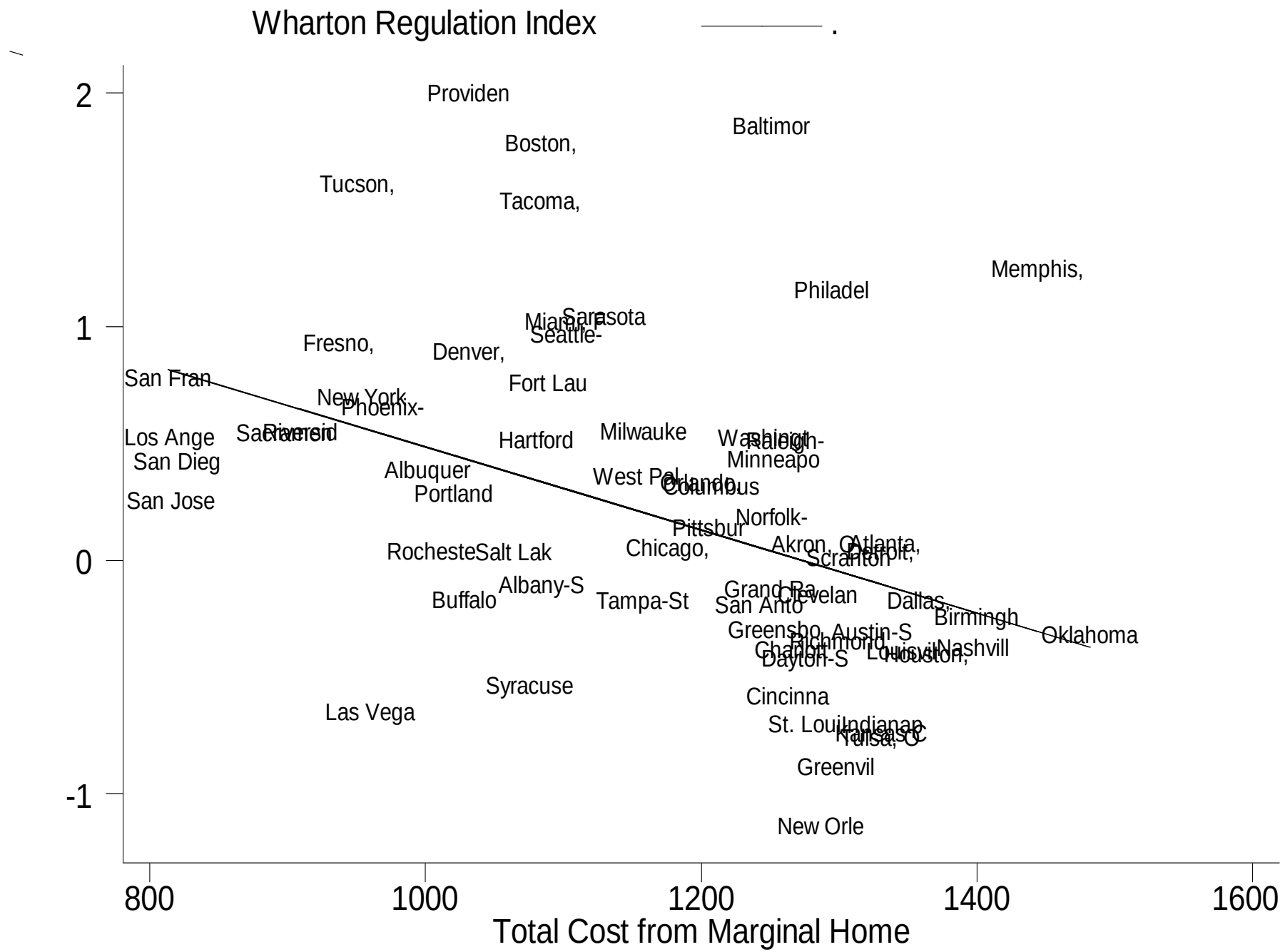


Figure 5: Land Use Regualtion and Emissions

Marginal Effect: City-Suburb Differences in CO_2 Output Emissions

Top 10 MSAs

MSA	City-Suburb Difference in Emissions from Driving (Lbs of CO2)	City-Suburb Difference in Emissions from Public Transportation (Lbs of CO2)	City-Suburb Difference in Emissions from Home Heating (Lbs of CO2)	City-Suburb Difference in Electricity (Lbs of CO2)	City-Suburb Difference in Carbon Dioxide Emissions Cost ($ per Year)
New York, NY	7,105	-2,367	5,953	5,637	351
Nashville, TN	8,002	-649	1,700	4,416	290
Boston, MA	7,197	-1,091	5,863	158	261
Minneapolis-St. Paul, MN	5,934	-105	2,661	2,539	237
Washington, DC	6,128	-2,280	2,176	4,518	227
Cincinnati, OH	4,255	-383	-204	6,427	217
Atlanta, GA	6,587	-1,242	1,324	3,136	211
Philadelphia, PA	7,030	-2,286	1,221	3,519	204
Houston, TX	2,846	-561	1,597	5,379	199
Hartford, CT	6,814	-2,905	2,762	2,314	193

Marginal Effect: City-Suburb Differences in CO_2 Output Emissions

Bottom 10 MSAs

MSA	City-Suburb Difference in Emissions from Driving (Lbs of CO2)	City-Suburb Difference in Emissions from Public Transportation (Lbs of CO2)	City-Suburb Difference in Emissions from Home Heating (Lbs of CO2)	City-Suburb Difference in Electricity (Lbs of CO2)	City-Suburb Difference in Carbon Dioxide Emissions Cost ($ per Year)
New Orleans, LA	4,086	-474	-526	-410	58
Tacoma, WA	2,615	-134	243	-685	44
Oklahoma City, OK	291	-115	281	1,525	43
Tampa-St. Petersburg-Clearwater, FL	3,712	-560	-201	-976	42
Akron, OH	2,118	-369	1,204	-1,341	35
Riverside-San Bernardino, CA	1,077	-8	924	-976	22
Los Angeles-Long Beach, CA	1,171	-229	550	-726	16
Fresno, CA	758	-92	24	-81	13
Dayton-Springfield, OH	2,295	-527	-1,918	34	-2
Rochester, NY	1,816	-554	-1,943	-356	-22