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11.433J / 15.021J Real Estate Economics
Fall 2008

Week 12: Real Estate and Regional Economic Growth

- Export production, Federal government or private transfers (social services, investment earnings) and direct investment all determine regional growth: demand.

- Satisfying regional demand takes factors of production: labor and capital (real estate).

- Population growth and migration provide labor supply

- Capital (real estate supply) comes from?

Simultaneous Equilibrium in a region's product, labor and structures markets.
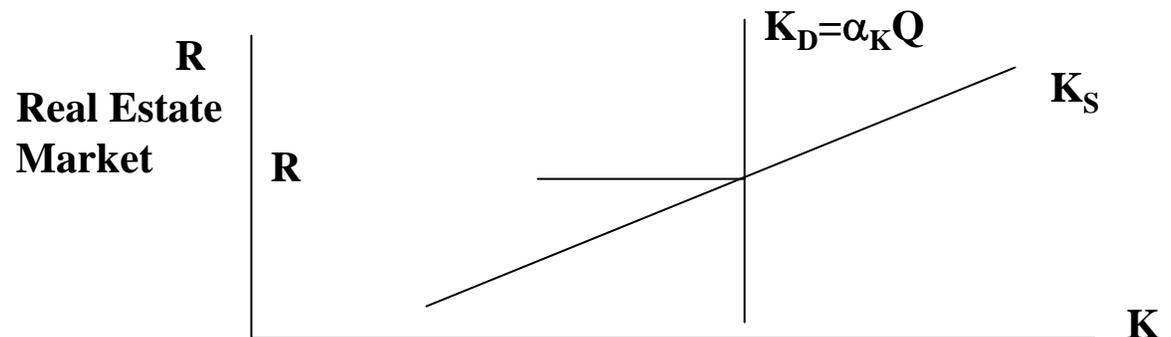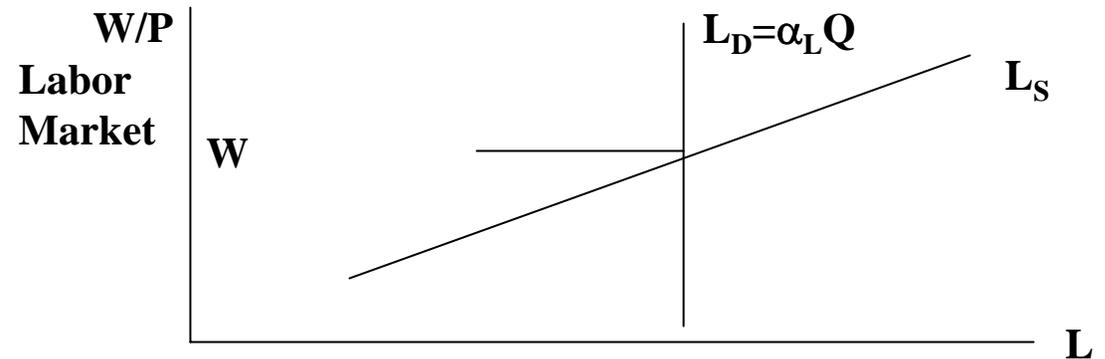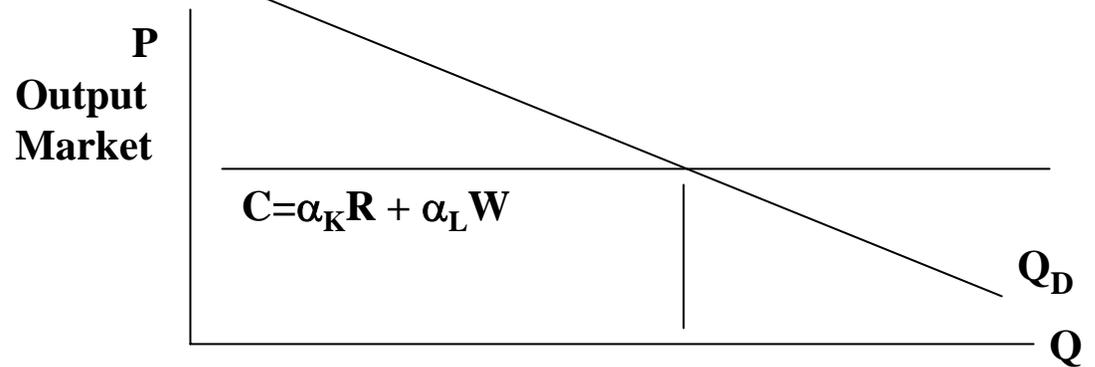
1. Product Demand=production costs.

2. Costs = average of wages and rents.

3. Wages equilibrate labor supply with labor demand (proportional to output).

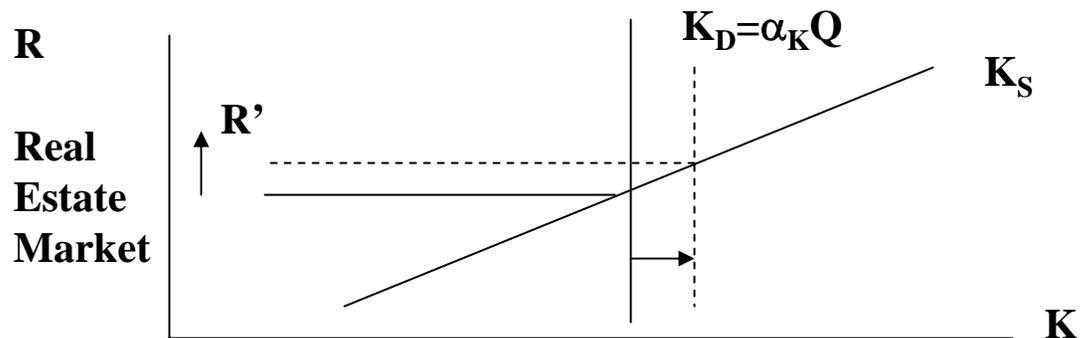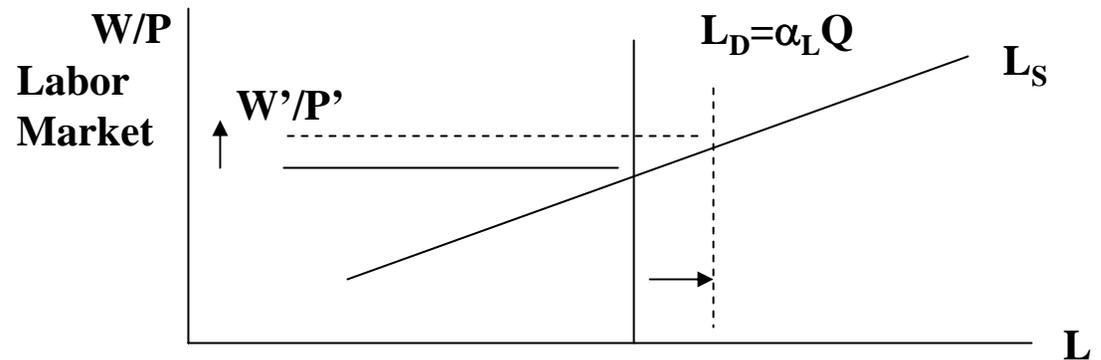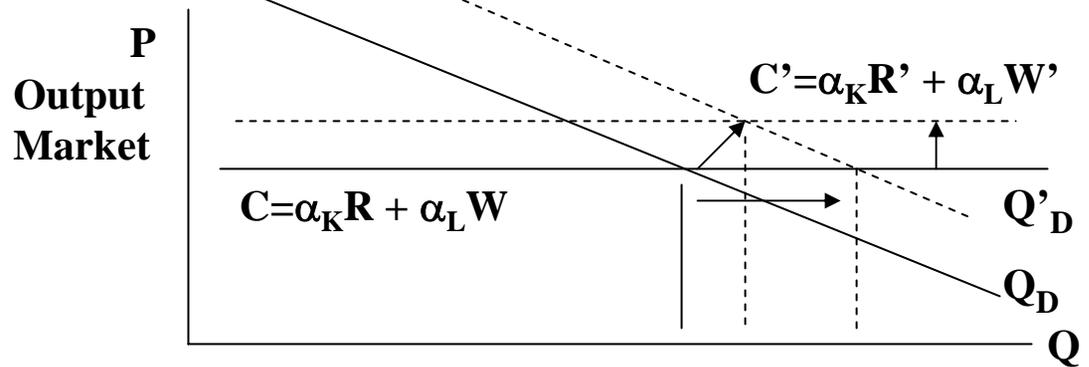4. Rents do the same in structures market.

P
Output Market

$C = \alpha_K R + \alpha_L W$

Q_D

Q

W/P
Labor Market

$L_D = \alpha_L Q$

L_S

W

L

R
Real Estate Market

$K_D = \alpha_K Q$

K_S

R

K

Changes in Regional output, prices, wages and rents in reaction to shift in product demand Q_D to Q_D' (e.g. Exports increase)

1). Prices (and costs) must rise. Ditto output.

2). Wages and employment rise.

3). Likewise for rents and stock of structures.

4). Reverse for downward demand shifts

5). Supply Elasticity determines the Magnitude of price versus quantity changes.

Output Market

P

$C'=\alpha_K R' + \alpha_L W'$

$C=\alpha_K R + \alpha_L W$

Q'_D

Q_D

Q

Labor Market

W/P

W'/P'

$L_D=\alpha_L Q$

L_S

L

Real Estate Market

R

R'

$K_D=\alpha_K Q$

K_S

K

Regional Supply shifts are as important

- Migration into a region that results from factors in the origin and not destination. [US historic immigration 1820-1920].

- Birth rates in the state – 20 years earlier! (Mass –vs- California Net Reproduction Rates).

- Recent immigration from Mexico and Asia.

Changes to Regional product, wages and rents from shift in labor supply to L'$_S$.
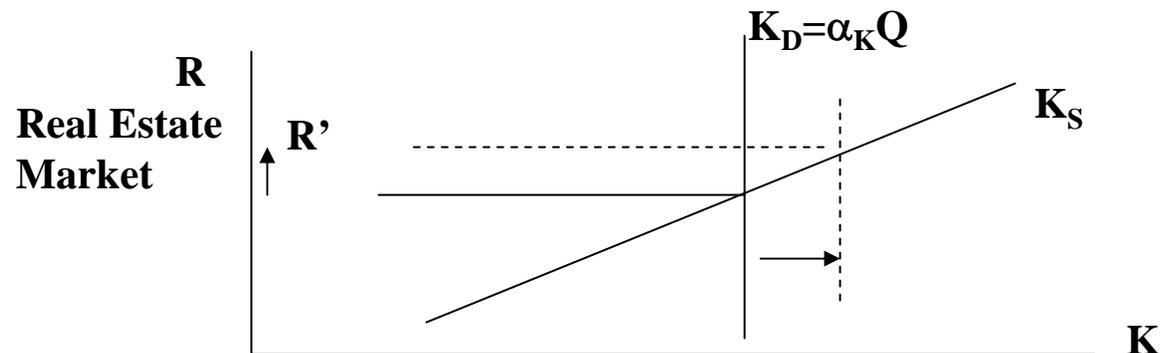
1). Wages must fall as employment rises.

2). Costs must fall and output expand.

3). Rents, however, rise as the stock expands.

4). What % of the labor shift is absorbed?

5). Product demand elasticity determines Price, wage versus quantity changes.

P
Output Market

$C=\alpha_K R + \alpha_L W$

$C=\alpha_K R' + \alpha_L W'$

Q_D

Q

W/P
Labor Market

$L_D=\alpha_L Q$

L_S

W'

L'_S

L

R
Real Estate Market

$K_D=\alpha_K Q$

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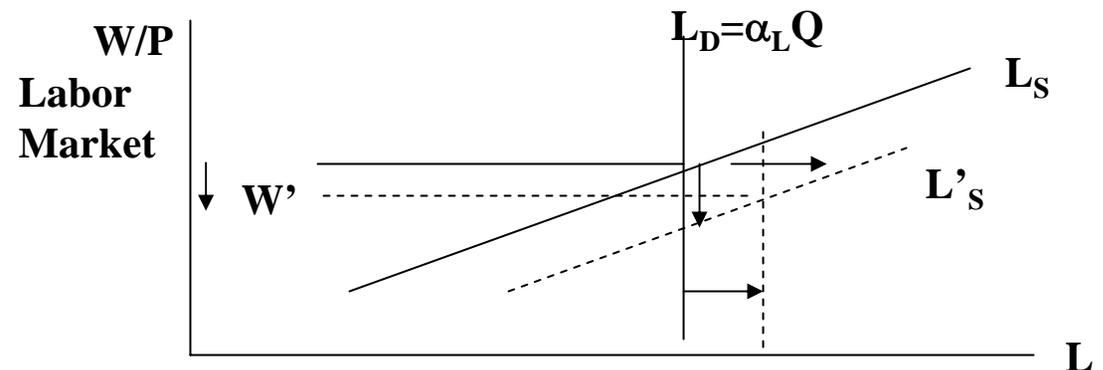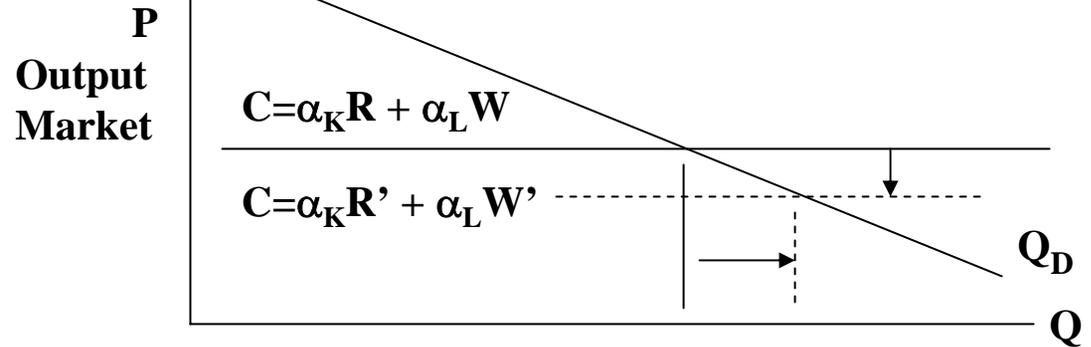
Recent Examples of Demand and Supply induced growth

Regional Differences in Labor and Wage Growth, 1960-1990

| Metropolitan Area*	Population (% Change)	Employment		Wages** (% Change)
		Total (% Change)	Manufacturing (% Change)	
Atlanta	179	312.0	109.0	19
Chicago	18	54.0	-21.0	3
Dallas	136	241	140.0	19
Detroit	16	71.0	-9.0	18
Miami	107	191.0	109.0	-8
Pittsburgh	-7	31.0	-52.0	-8
San Diego	142	275.0	103.0	-3
St. Louis	19	64.0	-12.0	18

* 1960 figures based on 1960 Census Bureau MSA definitions; 1990 figures based on 1990 Census Bureau definitions

**Real average hourly earnings of production workers in manufacturing, 1990 dollars

adapted from DiPasquale and Wheaton (1996)

In the Long run:

1). If regions vary in productivity (demand shifts in red): wages and rents will be positively correlated across areas.

2). If they vary because of amenities (supply shifts in blue): then wages and rents are negatively correlated across areas.

MIT Center for Real Estate
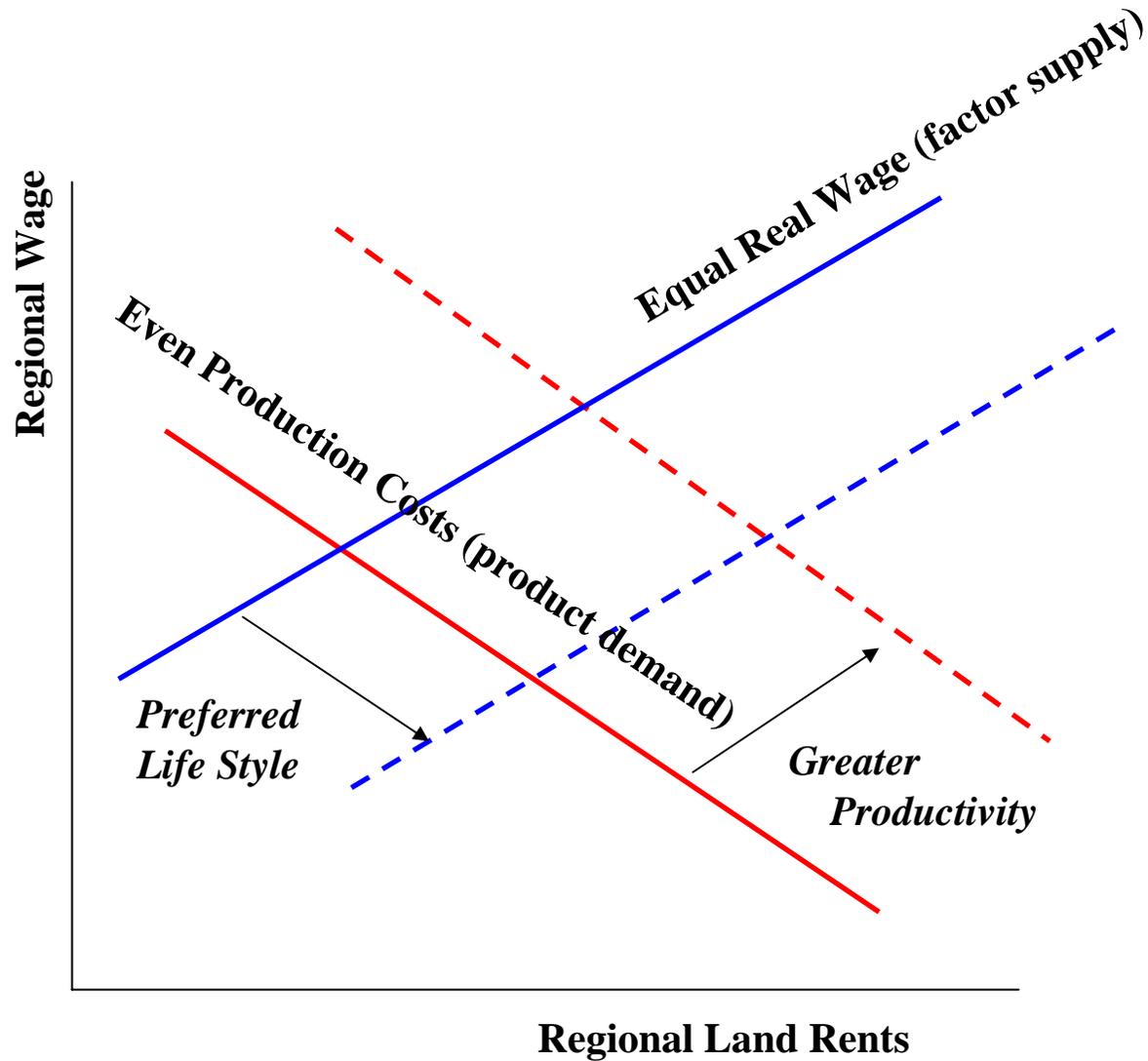
Metropolitan Area	Actual Wage**	Skill-Adjusted Wage**	Median House Value***	Cost of living index*
Anaheim	11.22	11.09	237,184.00	132.30
Birmingham	9.27	9.08	79,662.00	98.50
Boston	11.88	11.31	200,000.00	164.10
Buffalo	9.34	9.50	78,614.00	107.20
Cincinnati	10.19	10.00	78,745.00	102.40
Cleveland	10.36	10.16	83,855.00	109.50
Dallas	10.62	10.44	85,000.00	103.80
Denver	10.89	10.35	86,335.00	101.50
Ft. Worth	10.33	9.96	80,000.00	103.20
Indianapolis	9.62	9.61	78,614.00	99.30
Kansas City	10.69	10.22	71,155.00	95.10
Los Angeles	10.90	10.83	225,000.00	126.50
Miami	9.43	9.75	94,874.00	110.10
Milwaukee	10.11	9.91	92,240.00	102.00
Minneapolis	11.22	11.10	95,000.00	99.80
New Orleans	9.42	9.45	68,309.00	97.80
Philadelphia	10.98	10.72	139,000.00	127.20
Pittsburgh	9.84	9.56	71,155.00	102.50
Portland, OR	10.34	10.19	80,643.00	103.00
San Francisco	12.62	11.94	250,000.00	144.50
San Jose	13.06	11.83	251,564.00	129.90
Tampa	9.07	8.97	85,000.00	100.70
Washington, DC	11.97	11.22	170,000.00	128.40
Average	10.58	10.31	120,954.00	112.60

Over many years, in many countries, there are persistent positive correlations between wages and housing rents.

1989 dollars.

**calculated by multiplying wage differential indices by Dec. 1989 seasonally adjusted afg hourly earnings of production or nonsupervisory workers on private, nonaagricultural payrolls.*

****From American Housing Survey median house values for 1988, 1989, or 1990, converted to real 1989 dollars*

From 3Q 1989, except Boston (3Q88), Cincinatti and San Jose (4Q89), and Tampa (1Q90)

adapted from DiPasquale and Wheaton (1996)

Much of this correlation is because of a strong correlation between both variables and city size

Wages and SMSA population. Data from *Statistical Abstract of the United States*, tables 42 and 670.
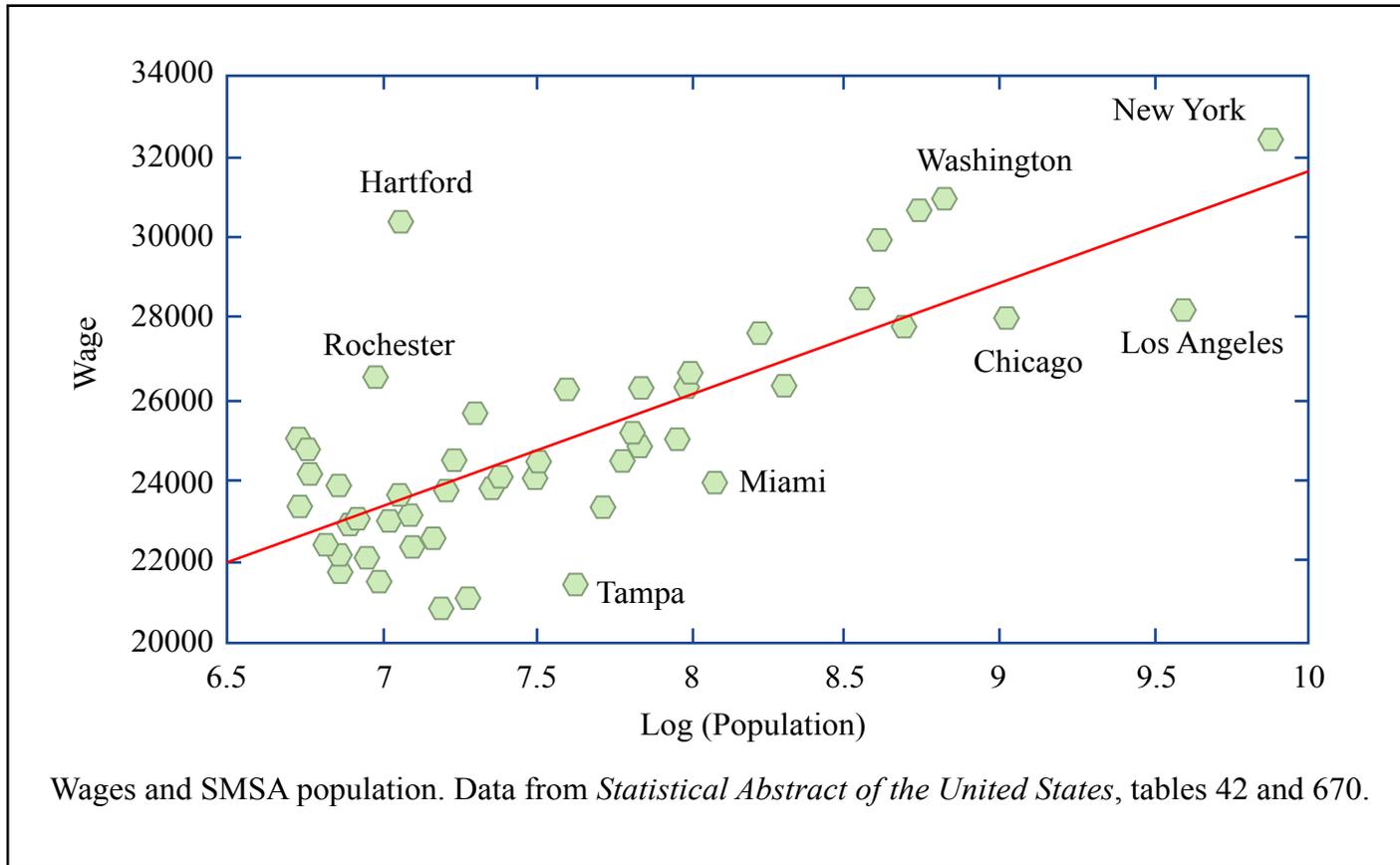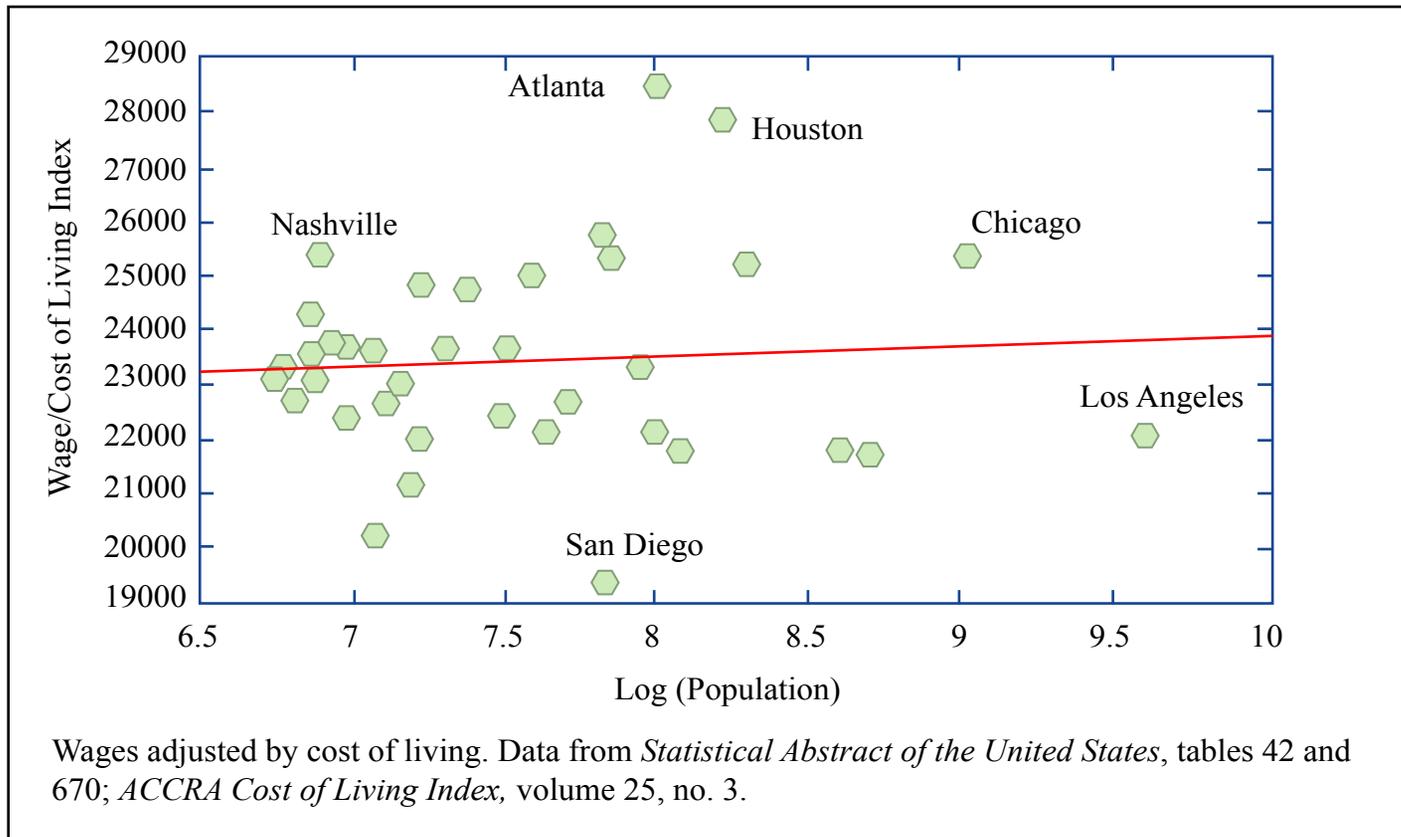
Figure by MIT OpenCourseWare.

Hence little correlation between city size and wages once wages are deflated by a cost of living (mostly housing)

Wages adjusted by cost of living. Data from *Statistical Abstract of the United States*, tables 42 and 670; *ACCRA Cost of Living Index,* volume 25, no. 3.

Figure by MIT OpenCourseWare.

The answer? Greater Urban Productivity

- Recently, nominal wages have been 40% higher in big cities than outside metro areas

- Cost of living may explain why labor doesn't flock to cities, but why do firms stay?

- Higher productivity and Wages

  – Cities have greater human capital?

    - Cities attract "better" labor? Or do cities facilitate more accumulation of human capital?

  – Cities create productivity through proximity of firms

    - Theories of localization and urbanization