14.03/003 Microeconomic Theory & Public Policy
Fall 2022

Lecture 10. Applied Competitive Analysis II — The Market for Residential Real Estate Brokers

David Autor (Prof), MIT Economics and NBER
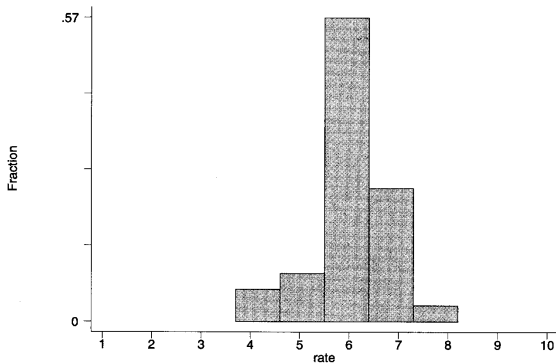**Jonathan Cohen (TA), MIT Economics**

Today

- The two roles of prices in a market economy
    1. The 'right' quantity
    2. The 'right' allocation among buyers and sellers

- The concept of 'rent seeking'

- The market for residential real estate brokers

What are economic rents?

- Economic rent is any payment to an owner or factor of production *in excess of the costs needed to bring that factor into production*

- Rents occur at the margin — hence distinct from consumer or producer surpluses

- Existence of rents often leads to 'rent seeking'

- But rent seeking is often costly in itself

There might be rents in the U.S. residential real estate market
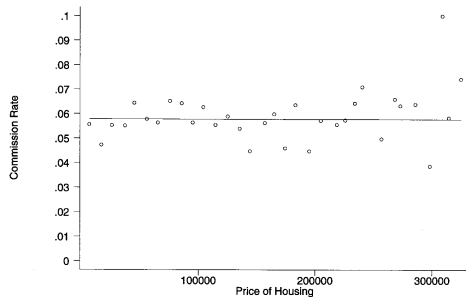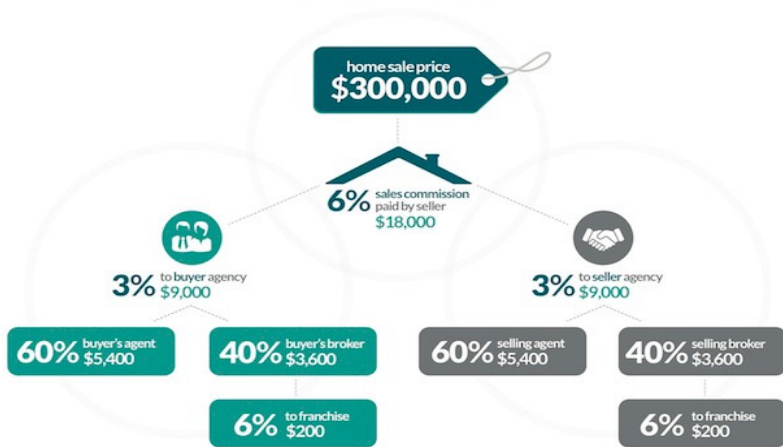
Real estate commissions and house prices
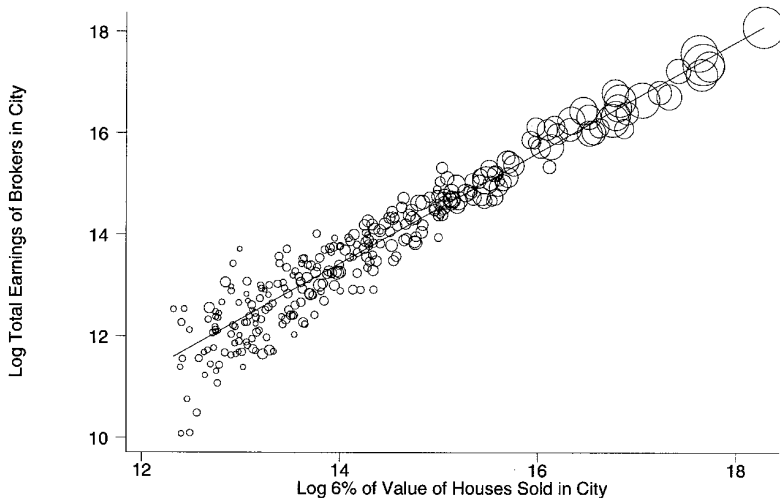

FIG. 4.—Commission rates and price of housing in the CEX. Each point in the figure is the average commission rate within intervals in housing price $10,000 wide. The superimposed fit is taken from a household-level regression of commission rates on housing prices (N=406).

The distribution of real estate commissions (in % pts)

Average house prices & average commissions (in % pts)

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THE COMMI$$ION
EXPLAINED

home sale price
$300,000

6% sales commission
paid by seller
$18,000

3% to buyer agency
$9,000

3% to seller agency
$9,000

60% buyer's agent
$5,400

40% buyer's broker
$3,600

60% selling agent
$5,400

40% selling broker
$3,600

6% to franchise
$200

6% to franchise
$200

Citywide broker earnings in 1990 v. $0.06 \times \Sigma(\textbf{House Purchases in \$})$

Hsieh and Moretti '03

The market for Real Estate brokers: A simple model

A simple model: Four assumptions

1. There is an upward sloping supply of real estate brokers $Q_R(w)$, where w is the expected wage that a broker will earn if working

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2 Total commissions TC are equal to 6% of all real estate sales: $\text{TC} = \mathbf{0.06} \times \mathbf{\Sigma}(\text{House Purchases in \$})$

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TC $= \mathbf{0.06} \times \mathbf{\Sigma}$(House Purchases in \$)

3 Brokers do not affect the number of houses on the market, the price of housing, or the likelihood that a house sells (they all do)
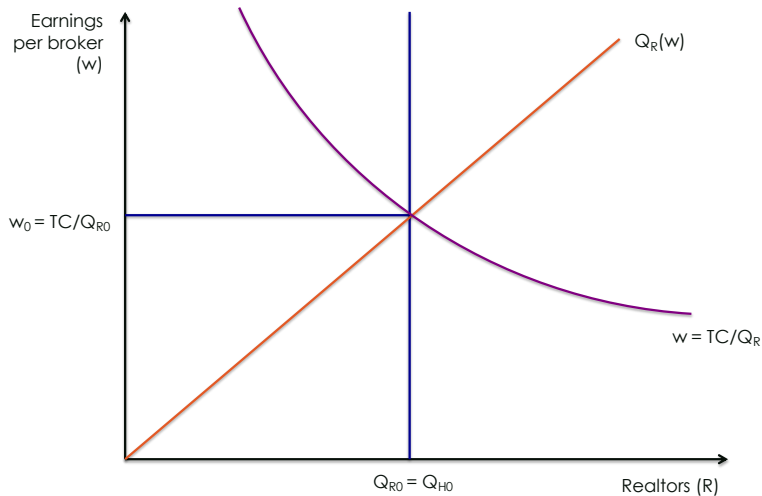
A simple model: Four assumptions

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2. Total commissions TC are equal to 6% of all real estate sales:
   TC $= \mathbf{0.06} \times \mathbf{\Sigma}$(House Purchases in \$)

3. Brokers do not affect the number of houses on the market, the price of housing, or the likelihood that a house sells (they all do)

4. The expected wage of a broker is equal to total commissions divided by the number of brokers

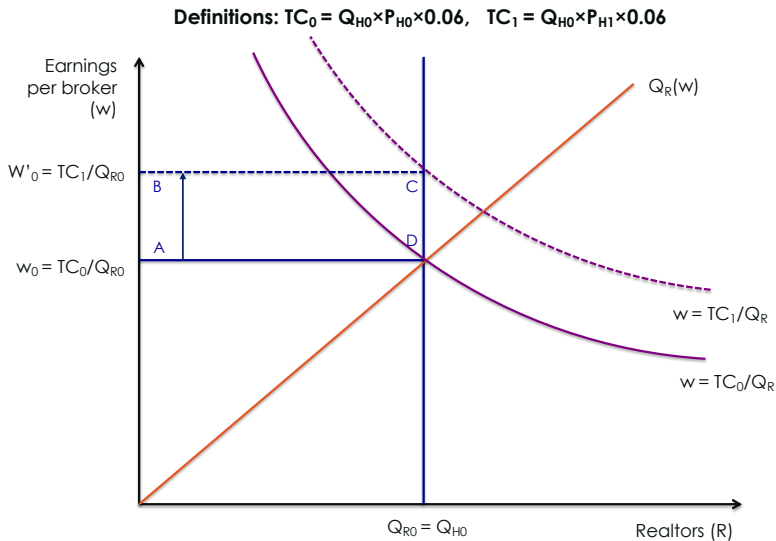$$E[w] = [\mathbf{0.06} \times \mathbf{\Sigma}(\text{House Purchases in \$})]/Q_R(w)$$

Equilibrium in real estate broker market

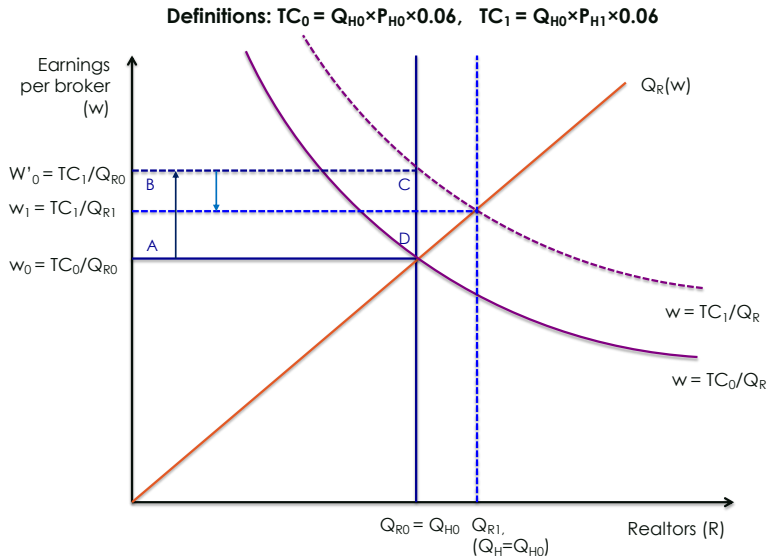Definitions: $TC_0 = Q_{H0} \times P_{H0} \times 0.06$, $TC_1 = Q_{H0} \times P_{H1} \times 0.06$

Earnings per broker (w)

$Q_R(w)$

$w_0 = TC/Q_{R0}$

$w = TC/Q_R$

$Q_{R0} = Q_{H0}$

Realtors (R)

What happens in the broker market when house prices rise?

Effect of house price increase on broker market

Definitions: $TC_0 = Q_{H0} \times P_{H0} \times 0.06$, $TC_1 = Q_{H0} \times P_{H1} \times 0.06$

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Earnings per broker (w)

$Q_R(w)$

$W'_0 = TC_1/Q_{R0}$

$w_1 = TC_1/Q_{R1}$

$w_0 = TC_0/Q_{R0}$

B

C

A

D

$w = TC_1/Q_R$

$w = TC_0/Q_R$

$Q_{R0} = Q_{H0}$ $Q_{R1},$
$(Q_H = Q_{H0})$

Realtors (R)

Predictions: Effect of ΔP_{houses} on real estate brokers

When house prices rise...

1. More real estate brokers enter the market

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When house prices rise...

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2. Houses sold per broker falls

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When house prices rise...

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3. Earnings of brokers rise less than one-for-one with house prices

Predictions: Effect of ΔP_{houses} on real estate brokers

When house prices rise...

1. **More real estate brokers enter the market**

2. Houses sold per broker falls

3. Earnings of brokers rise less than one-for-one with house prices

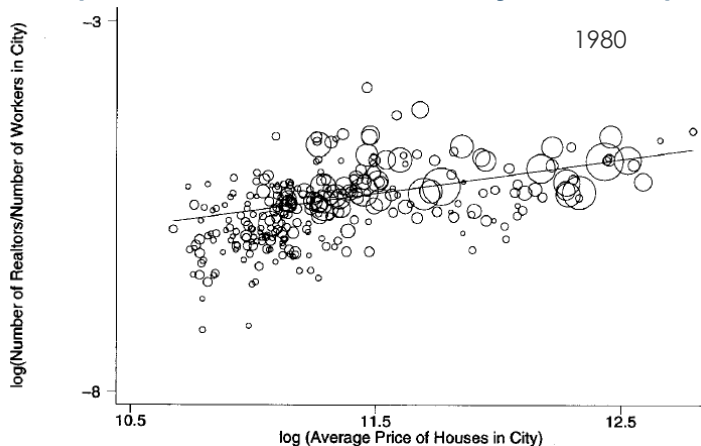# Brokers as % of employed adults v. average house prices in 1980: Cross-city scatter plot

FIG. 5.—Percentage of real estate agents in the labor force and the average cost of housing: *a*, 1990; *b*, 1980. Each bubble represents a metropolitan area. The size of the bubble is proportional to the metropolitan area population. There are 282 metropolitan areas. Data are taken from the Census of Population and Housing.

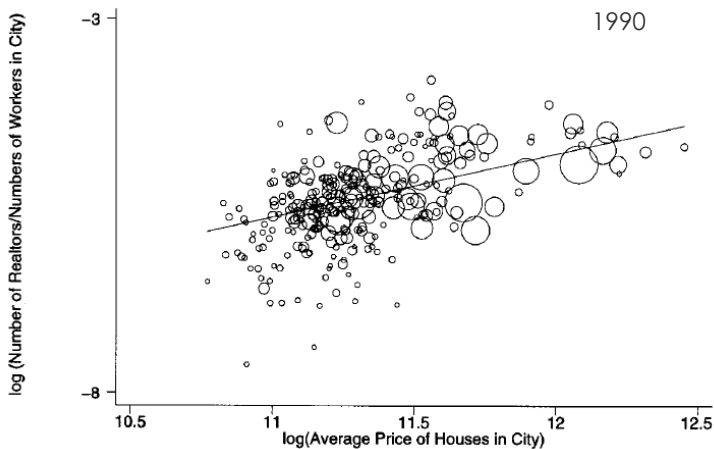## Brokers as % of employed adults v. average house prices in 1990: Cross-city scatter plot

Fig. 5.—Percentage of real estate agents in the labor force and the average cost of housing: a, 1990; b, 1980. Each bubble represents a metropolitan area. The size of the bubble is proportional to the metropolitan area population. There are 282 metropolitan areas. Data are taken from the Census of Population and Housing.

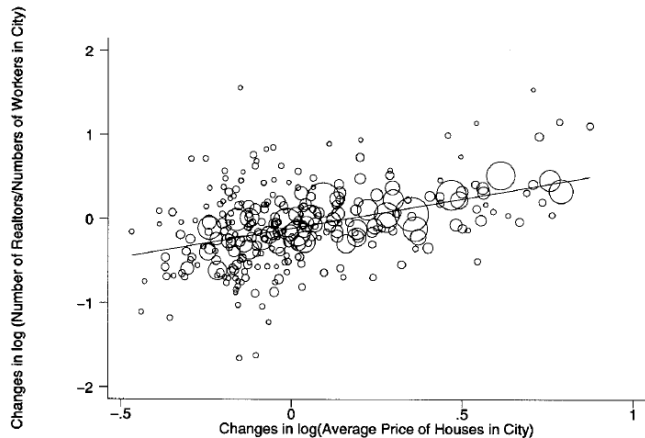## △ Brokers as % of employed adults v. △ average house prices, 1980–1990

Fig. 6.—1980–90 changes in the percentage of real estate agents in the labor force and changes in the average cost of housing. Each bubble represents a metropolitan area. The size of the bubble is proportional to the metropolitan area population. There are 282 metropolitan areas. Data are taken from the 1980 and 1990 Census of Population and

Predictions: Effect of ΔP_{houses} on real estate brokers

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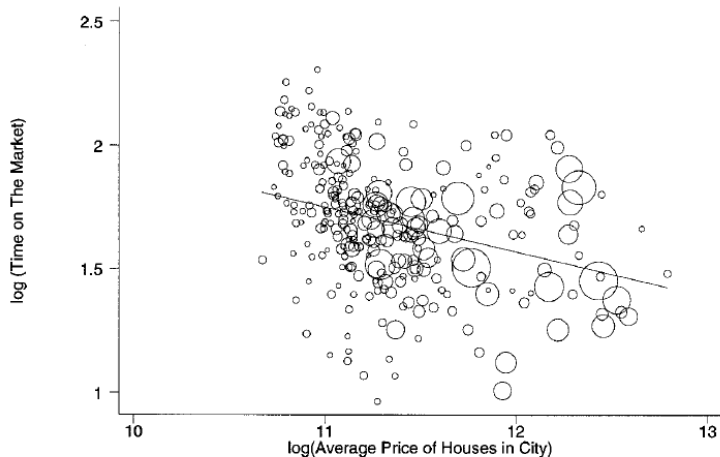# Average Time on the Market vs. Average House Prices (1990)

FIG. 10.—Cost of housing in 282 metropolitan areas and vacancy time. Each bubble represents a metropolitan area. The size of the bubble is proportional to the metropolitan area population. There are 282 metropolitan areas. Data are taken from the 1990 Census of Population and Housing.

Hsieh and Moretti '03

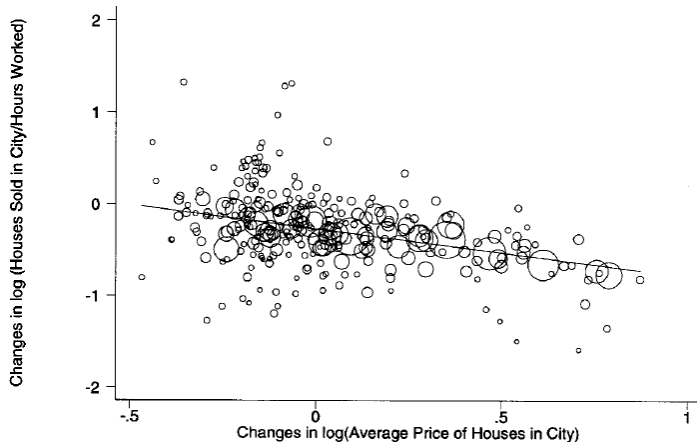# Productivity: Δ[Houses Sold/Broker Hours] vs. Δ House Prices

FIG. 1.—1980–90 changes in the productivity of real estate agents (houses sold in the city/hours worked) and changes in the cost of housing. Each bubble represents a metropolitan area. The size of the bubble is proportional to the metropolitan area population. There are 282 metropolitan areas. Data are taken from the 1980 and 1990 Census of Population and Housing.

Regression: $\ln\Delta$(Houses Sold)/(Broker Hours Worked) on ΔP_{houses}

TABLE 5

EFFECT OF AVERAGE PRICE OF HOUSES ON THE PRODUCTIVITY OF BROKERS WHEN HOUSING QUALITY IS CONTROLLED FOR

	(1)	(2)
Cost of houses	−.646	−.714
	(.069)	(.080)
Average age		.011
		(.007)
Average number of bedrooms		.405
		(.175)
Percentage one-family homes		.875
		(.328)
Percentage condominiums		−.271
		(.330)
Percentage with plumbing		−1.150
		(2.766)
Percentage with a kitchen		3.335
		(2.696)
R^2	.23	.30
First stage:		
Repeated sales price index		
Census price index		
Observations	282	282

"Six Reasons You Should Never Buy or Sell a Home Without an Agent"

1. They have loads of expertise

2. They have turbocharged searching power

3. They have bullish negotiating chops

4. They're connected to *everyone*

5. They adhere to a strict code of ethics

6. They're your sage/ parent/ data analyst/ therapist—all rolled into one

REALTORS are working hard

"The thing about *Realtors*: They wear a lot of different hats. Sure, they're salespeople, but they actually do a whole heck of a lot to earn their commission... They spend their own money on marketing your home... And they're working for you at nearly all hours of the day and night—whether you need more info on a home or just someone to talk to in order to feel at ease with the offer you just put in."

Predictions: Effect of ΔP_{houses} on real estate brokers

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Regression of $\ln$(broker hourly earnings) on $\ln(P_{houses})$ 1980, 1990, 1980-90

Regression: $\ln\Delta$(Houses Sold)/(Broker Hours Worked) on ΔP_{houses}

TABLE 4
EFFECT OF AVERAGE PRICE OF HOUSES ON RELATIVE WAGE OF BROKERS

	1990 (1)	1980 (2)	Changes 1980–90 (3)
Cost of houses	.079 (.019)	.163 (.027)	.064 (.041)
R^2	.05	.10	.01

NOTE.—Standard errors are in parentheses. The dependent variable is the log difference between the average earnings of brokers and brokers' reservation wage. The reservation wage is a weighted average of the wages of workers in non–real estate occupations in the same city; the weights are based on how similar their observable characteristics are to those of brokers. The number of observations is 282.

Hsieh and Moretti '03

Correlations between average house prices and demographic attributes of real estate brokers

TABLE 3

CORRELATION BETWEEN HOUSING PRICES AND OBSERVABLE CHARACTERISTICS OF BROKERS

	Mean in 1990 (1)	1990 (2)	1980 (3)	Changes 1980–90 (4)
College or some college	.78	.06 (.01)	.15 (.01)	.00 (.02)
Years of schooling	14.2	.49 (.05)	.70 (.08)	.21 (.10)
Part-time	.14	−.03 (.01)	−.06 (.01)	−.00 (.01)
Female	.53	−.02 (.01)	−.06 (.01)	−.01 (.02)
Black	.03	.01 (.00)	.01 (.00)	.00 (.00)
Age	44.7	−1.51 (.30)	.30 (.42)	−3.40 (.62)

NOTE.—Standard errors are in parentheses. Entries in col. 1 are 1990 averages. Entries in cols. 2–4 are the OLS coefficients on log housing prices. The sample includes only real estate brokers. College or some college is a dummy equal to one if years of schooling is 13 or more. Part-time is a dummy equal to one if the broker works less than 30 hours a week. All models are weighted by city population. The number of observations is 282.

ENFORCING ANTITRUST LAWS IN THE REAL ESTATE INDUSTRY

The Division is protecting consumers through its litigation and investigative efforts. This page describes the Division's enforcement efforts in selected states.

On this page:

Litigation

- U.S. v. National Association of Realtors
- U.S. v. Consolidated Multiple Listing Service, Inc.
- U.S. v. Multiple Listing Service of Hilton Head Island, Inc.
- U.S. v. Kentucky Real Estate Commission

Investigations

- Montana Rebate Ban
- West Virginia Rebate Ban
- South Dakota Rebate Ban

Okay – Brokers respond to incentives. So, what's the economic problem here?

Effect of house price increase: Economic accounting

Definitions: $TC_0 = Q_{H0} \times P_{H0} \times 0.06$, $TC_1 = Q_{H0} \times P_{H1} \times 0.06$
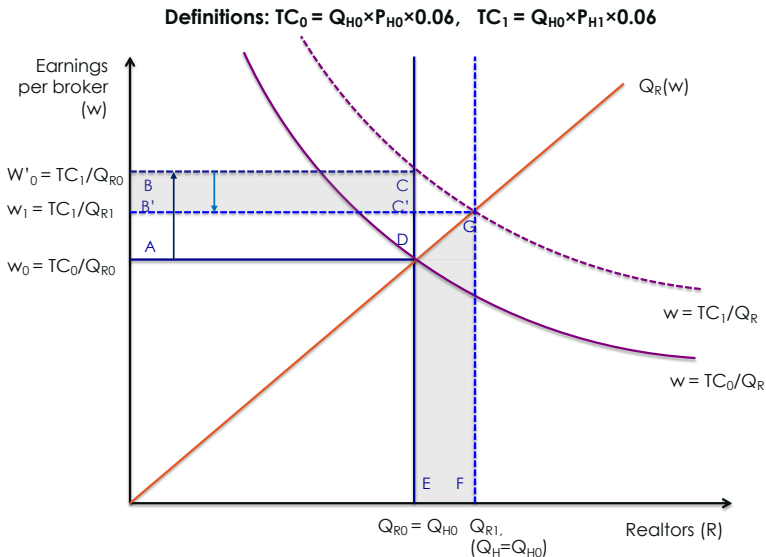
How should broker commissions be structured?