

# Introductory Macroeconomics

## Lecture of March 9, 2010

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# Indexes and Index Numbers

Well-known index numbers:

CPI (Consumer Price Index)

PPI (Producer Price Index)

Dow-Jones Index

# Indexes

## Price Indexes

CPI

PPI

Implicit GDP Deflator

## Quantity Indexes

GDP

Real vs. Nominal measures

# Indexes and Index Numbers

What can be learned from index numbers?  
(comparison of index of California housing prices  
to CPI)

Selected spatial concentration indexes

Location Quotients

Hachman Index (HI)

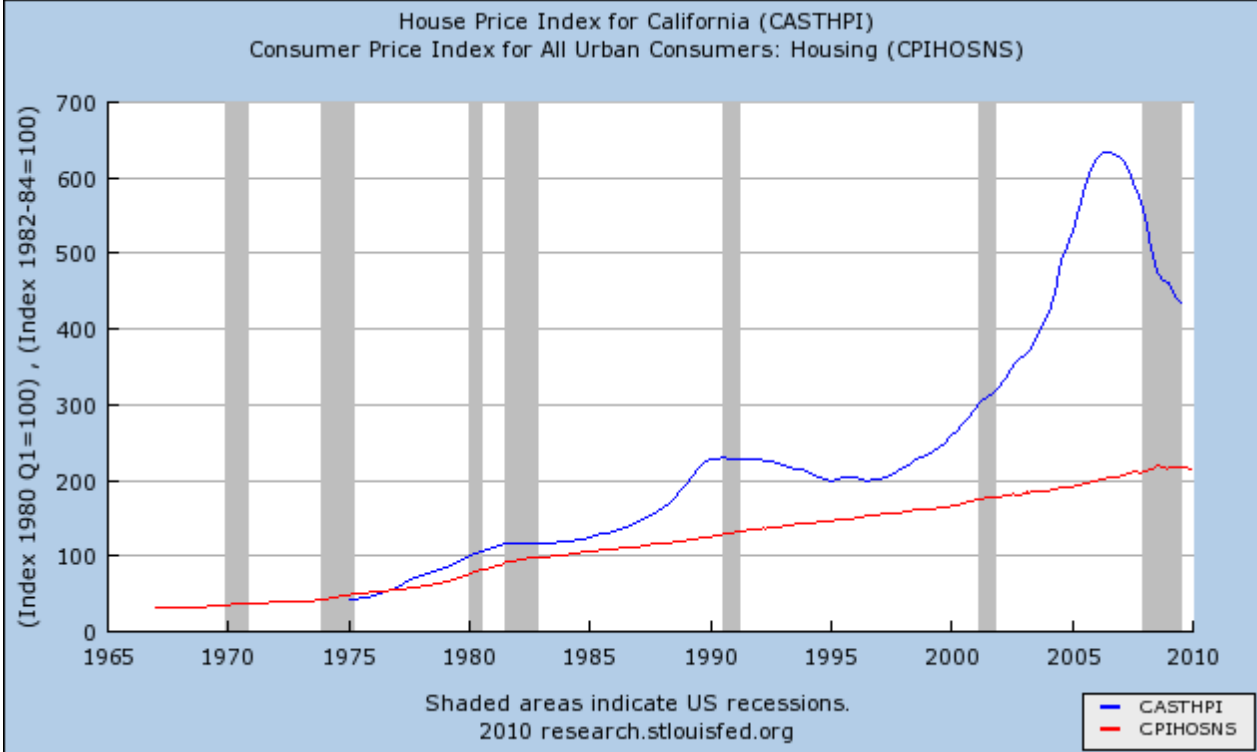
Federal Reserve Bank of San Francisco Report

Moody's Economy.com Reports

Herfindahl-Hirschman Index (HHI)

Ellison-Glaeser Index (EGI)

# California Housing Prices vs. Housing Component of National CPI



# Real vs. Nominal

Anything measured in terms of money has a **nominal** (number of dollars) aspect and a **real** (purchasing power of dollars) aspect. The purchasing power of dollars changes because of changes in the average level of prices (as typically measured by a **price index**).

Price indexes measure the average level of prices relative to a **base year** (which can be any year – it is arbitrary).

# Consumer Price Index

## All Urban Consumers

**Series Id:** CUUR0000SA0

Not Seasonally Adjusted

**Area:** U.S. city average

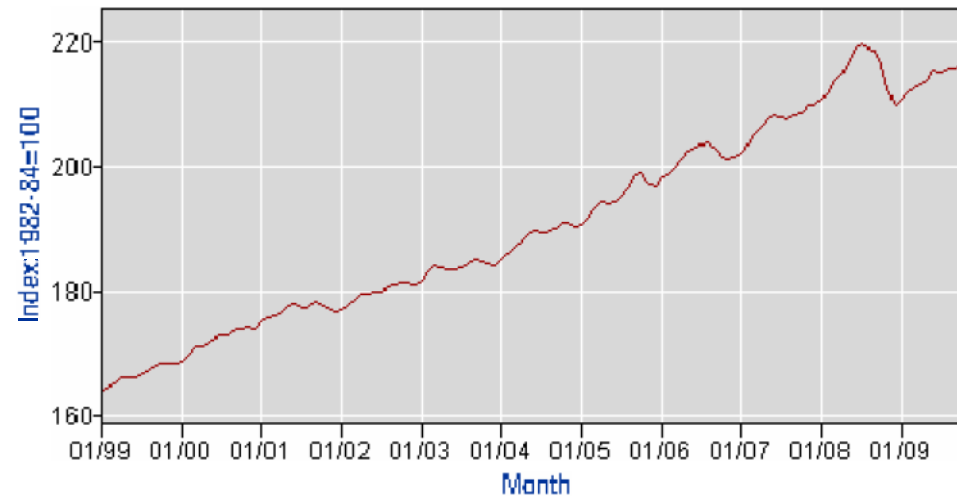
**Item:** All items

**Base Period:** 1982-84=100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2
1999	164.3	164.5	165	166.2	166.2	166.2	166.7	167.1	167.9	168.2	168.3	168.3	166.6	165.4	167.8
2000	168.8	169.8	171.2	171.3	171.5	172.4	172.8	172.8	173.7	174	174.1	174	172.2	170.8	173.6
2001	175.1	175.8	176.2	176.9	177.7	178	177.5	177.5	178.3	177.7	177.4	176.7	177.1	176.6	177.5
2002	177.1	177.8	178.8	179.8	179.8	179.9	180.1	180.7	181	181.3	181.3	180.9	179.9	178.9	180.9
2003	181.7	183.1	184.2	183.8	183.5	183.7	183.9	184.6	185.2	185	184.5	184.3	184	183.3	184.6
2004	185.2	186.2	187.4	188	189.1	189.7	189.4	189.5	189.9	190.9	191	190.3	188.9	187.6	190.2
2005	190.7	191.8	193.3	194.6	194.4	194.5	195.4	196.4	198.8	199.2	197.6	196.8	195.3	193.2	197.4
2006	198.3	198.7	199.8	201.5	202.5	202.9	203.5	203.9	202.9	201.8	201.5	201.8	201.6	200.6	202.6
2007	202.416	203.499	205.352	206.686	207.949	208.352	208.299	207.917	208.49	208.936	210.177	210.036	207.342	205.709	208.976
2008	211.08	211.693	213.528	214.823	216.632	218.815	219.964	219.086	218.783	216.573	212.425	210.228	215.303	214.429	216.177
2009	211.143	212.193	212.709	213.24	213.856	215.693	215.351	215.834	215.969	216.177	216.33	215.949	214.537	213.139	215.935

data from <http://www.bls.gov/>

# CPI Graph



# Very Important Formula

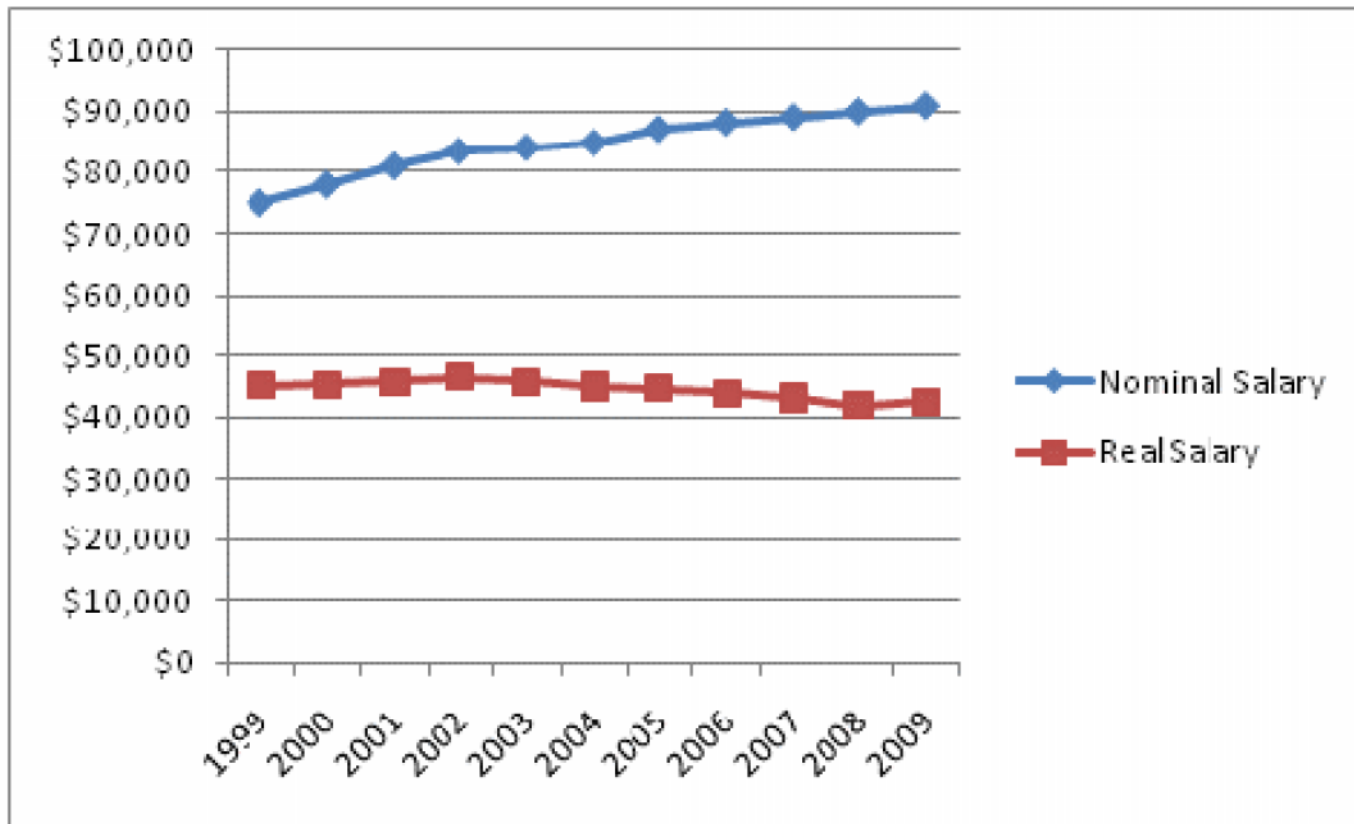
$$\text{Real}_{\text{BY}}(\text{something}) = (\text{Nominal}(\text{something}) / \text{Price Index}_{\text{BY}}) * 100$$

# Real vs. Nominal Salary (Example)

## Base Year (Period) 1982-1984

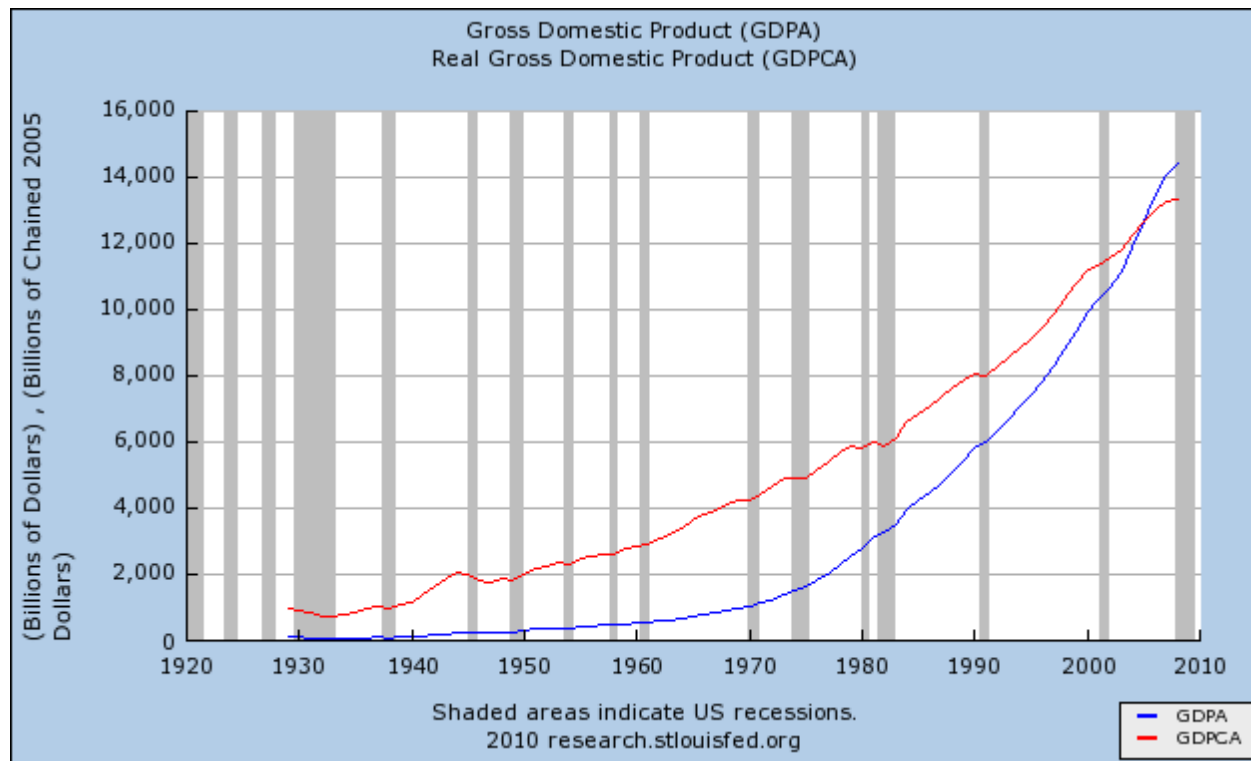
<b>Year</b>	<b>Annual</b>	<b>Nominal Salary</b>	<b>Real Salary</b>
<b>1999</b>	166.6	\$75,000	\$45,018
<b>2000</b>	172.2	\$78,000	\$45,296
<b>2001</b>	177.1	\$81,000	\$45,737
<b>2002</b>	179.9	\$83,500	\$46,415
<b>2003</b>	184	\$84,100	\$45,707
<b>2004</b>	188.9	\$84,900	\$44,944
<b>2005</b>	195.3	\$87,200	\$44,649
<b>2006</b>	201.6	\$88,300	\$43,800
<b>2007</b>	207.342	\$89,150	\$42,997
<b>2008</b>	215.303	\$90,050	\$41,825
<b>2009</b>	214.537	\$91,000	\$42,417

# Real vs. Nominal Salary (Example)



# Real vs. Nominal GDP

## Year 2005 Base Year



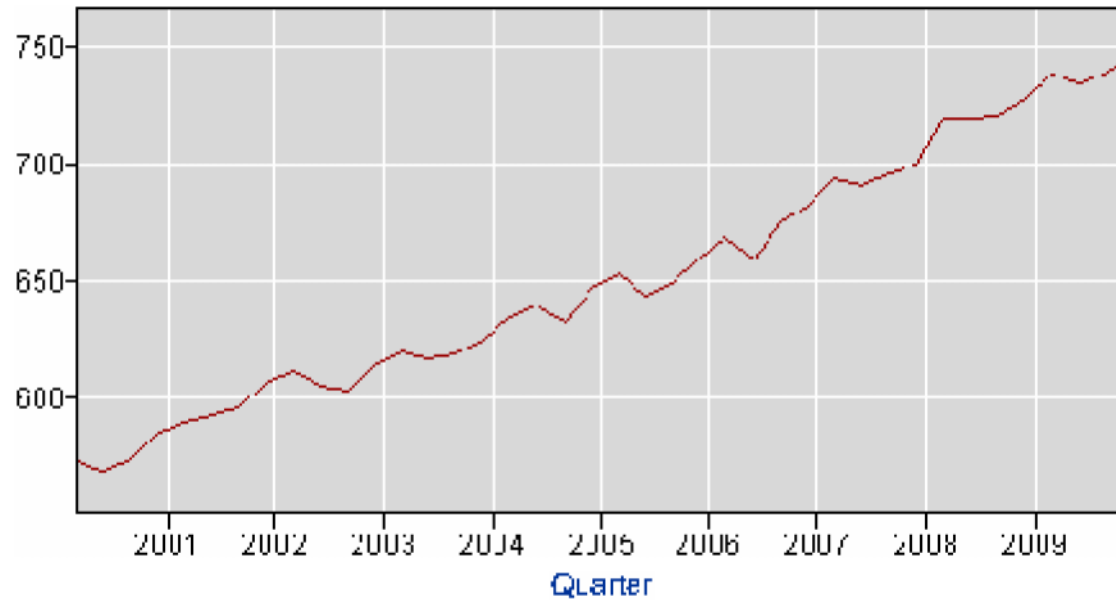
# How are index numbers computed?

- Four steps to computing a price index:
  1. Select a base year
  2. Identify a market basket of goods and services
  3. Determined spending (expenditures) on the (given) market basket of goods and services
  4. Compute the ratio:
    - (expenditures on the given market basket in a particular year)/expenditures on the given market basket in the base year)

# Median Weekly Earnings (Nominal)

<b>Year</b>	<b>Qtr1</b>	<b>Qtr2</b>	<b>Qtr3</b>	<b>Qtr4</b>	<b>Annual</b>
<b>2000</b>	<b>573</b>	<b>569</b>	<b>574</b>	<b>585</b>	<b>576</b>
<b>2001</b>	<b>589</b>	<b>592</b>	<b>596</b>	<b>606</b>	<b>596</b>
<b>2002</b>	<b>611</b>	<b>605</b>	<b>603</b>	<b>613</b>	<b>608</b>
<b>2003</b>	<b>620</b>	<b>616</b>	<b>618</b>	<b>625</b>	<b>620</b>
<b>2004</b>	<b>634</b>	<b>639</b>	<b>632</b>	<b>647</b>	<b>638</b>
<b>2005</b>	<b>653</b>	<b>643</b>	<b>649</b>	<b>659</b>	<b>651</b>
<b>2006</b>	<b>668</b>	<b>659</b>	<b>675</b>	<b>682</b>	<b>671</b>
<b>2007</b>	<b>693</b>	<b>690</b>	<b>695</b>	<b>700</b>	<b>695</b>
<b>2008</b>	<b>719</b>	<b>719</b>	<b>720</b>	<b>728</b>	<b>722</b>
<b>2009</b>	<b>738</b>	<b>734</b>	<b>738</b>	<b>748</b>	<b>739</b>

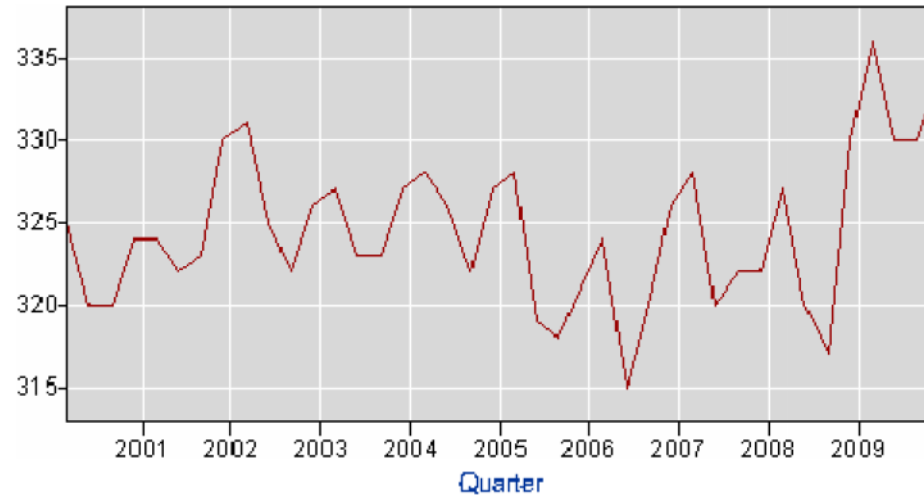
# Median Weekly Earnings (Nominal)



# Median Weekly Earnings (Real)

<b>Year</b>	<b>Qtr1</b>	<b>Qtr2</b>	<b>Qtr3</b>	<b>Qtr4</b>	<b>Annual</b>
<b>2000</b>	325	320	320	324	323
<b>2001</b>	324	322	323	330	325
<b>2002</b>	331	325	322	326	326
<b>2003</b>	327	323	323	327	325
<b>2004</b>	328	326	322	327	326
<b>2005</b>	328	319	318	321	322
<b>2006</b>	324	315	320	326	321
<b>2007</b>	328	320	322	322	323
<b>2008</b>	327	320	317	330	323
<b>2009</b>	336	330	330	334	333

# Median Weekly Earnings (Real)



**Table 2: Nominal and Real Wages  
(in December of Each Year)**

<b>Year</b>	<b>Nominal Wage (dollars per hour)</b>	<b>CPI</b>	<b>Real Wage (1983 dollars per hour)</b>
1975	4.87	55.5	8.77
1980	7.12	86.3	8.25
1985	8.86	109.3	8.11
1990	10.35	133.8	7.74
1995	11.79	153.5	7.68
2000	14.29	174.0	8.21
2005	16.37	196.8	8.32