Houston: Foundations and Current Performance

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Houston Ranks Number 6 as a U.S. Metropolitan Area Based On 2007 Population

New York-Northern New Jersey-Long Island, NY-NJ-PA (MSA)	18782715
Los Angeles-Long Beach-Santa Ana, CA (MSA)	12866834
Chicago-Naperville-Joliet, IL-IN-WI (MSA)	9458442
Dallas-Fort Worth-Arlington, TX (MSA)	5982787
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD (MSA)	5810834
Houston-Sugar Land-Baytown, TX (MSA)	***5507557***
Miami-Fort Lauderdale-Miami Beach, FL (MSA)	5415440
Washington-Arlington-Alexandria, DC-VA-MD-WV (MSA)	5260705
Atlanta-Sandy Springs-Marietta, GA (MSA)	5127841
Detroit-Warren-Livonia, MI (MSA)	4494906
Boston-Cambridge-Quincy, MA-NH (MSA)	4465674
San Francisco-Oakland-Fremont, CA (MSA)	4164463
Phoenix-Mesa-Scottsdale, AZ (MSA)	4046914
Seattle-Tacoma-Bellevue, WA (MSA)	3262445

Houston's Economy Rests on Four Major Roles

- Medicine and the Texas Medical Center
- Aerospace and the Johnson Space Center
- Upstream Oil Exploration
- Downstream Oil Refining and Petrochemical Production

Texas Medical Center

- 46 Institutions
  - 73,600 employees
  - 37 million square feet in 100+ buildings
  - $10+ billion in capital investment
- Patient Care
  - 13 hospitals
  - 5.5 million patient visits
  - 10,000 M.D.'s, Ph.D.'s and other doctorates
  - 26,000 registered nurses, LVN's, support staff

Texas Medical Center

- Education
  - 2 medical schools
  - 11 affiliated universities have institutions
  - 33,000 full- and 75,000 part-time students
- Research
  - $3.5 billion in committed funds 2002-2004
  - Best known for heart and cancer research

Johnson Space Center and Manned Space Flight

- Design and construction of the space shuttle, as well as the Orion capsule and Ares I rocket to replace it
- On-going space shuttle operations, and termination in 2010
- Design and implementation of the international space station
- Development and launch of space station payloads

Economic Dimensions of JSC

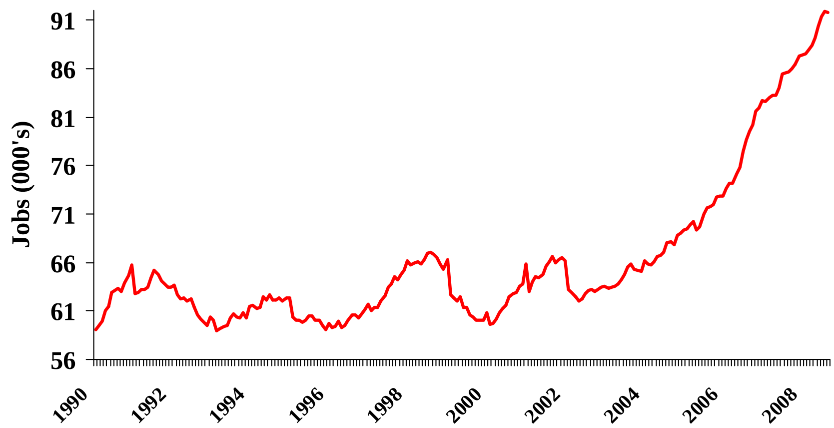
- Proposed budget for 2008
  - Approximately $200 million for local administration
  - NASA: $2.2 billion for International Space Station
  - NASA: $4.0 billion for space shuttle
  - NASA: $545.7 million for space & flight support
- 15,000 direct jobs
  - 3,000 JSC employees
  - 12,000 contractors
  - 110 astronauts
- 50 contractor companies

Upstream Oil In Houston (Local Employment)

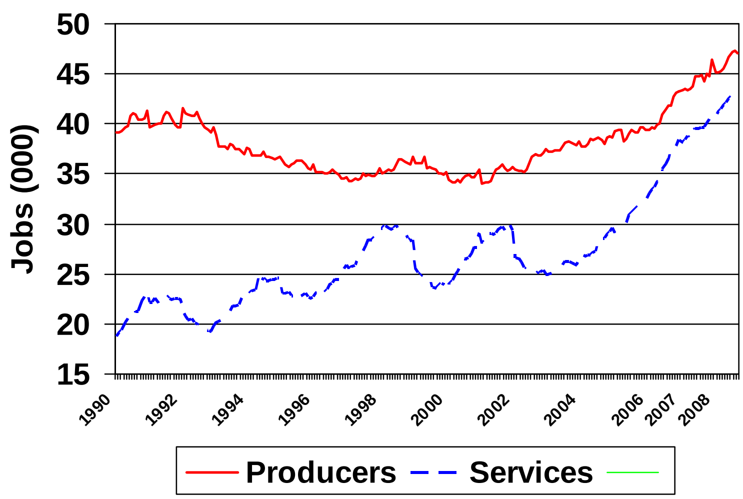
- ExxonMobil 16,732
- Shell 13,000
- Chevron 6,000
- ConocoPhillips 4,500
- El Paso Corp 2,150
- Halliburton 11,594
- Baker Hughes 7,000
- National Oilwell 5,000
- Weatherford 3,000
- Smith Int'l 2,700

Source: Houston Business Journal, *Book of Lists, 2007,* ConocoPhillips is 2006.

Oil and Natural Gas Mining Jobs in Houston: 1990 to Present

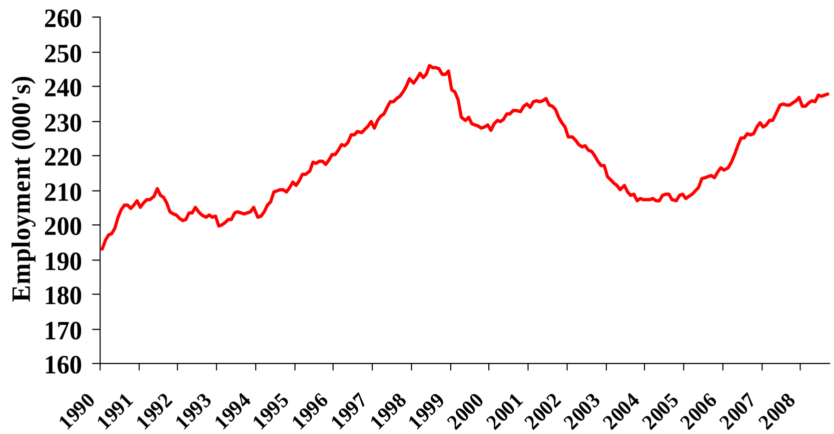


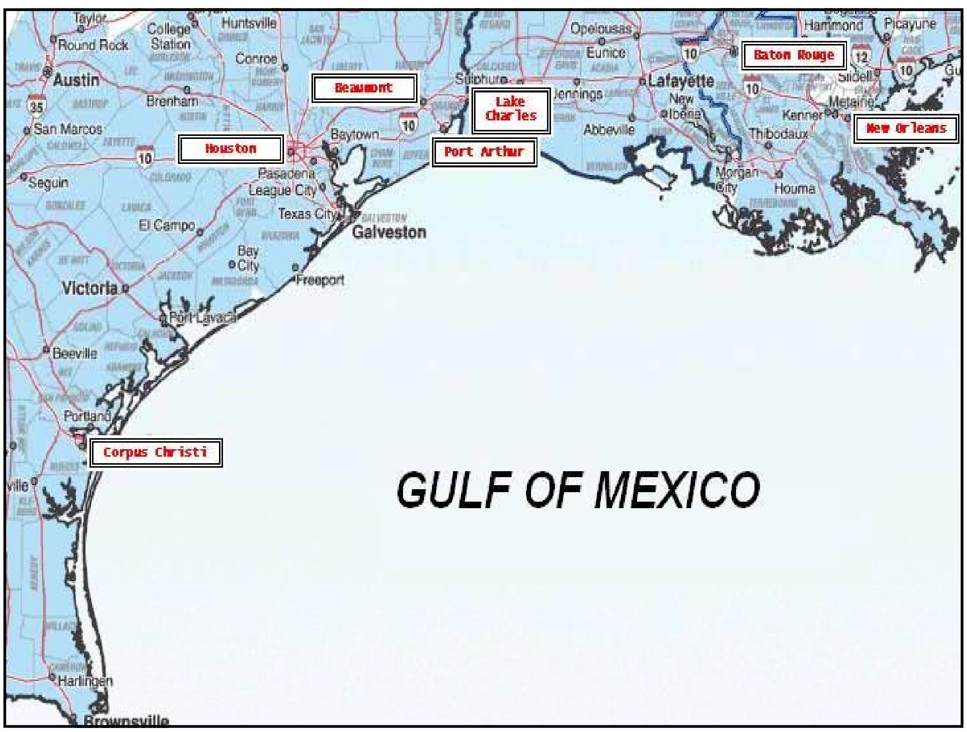
Houston Shows Growth in Both Producer and Oil Service Jobs



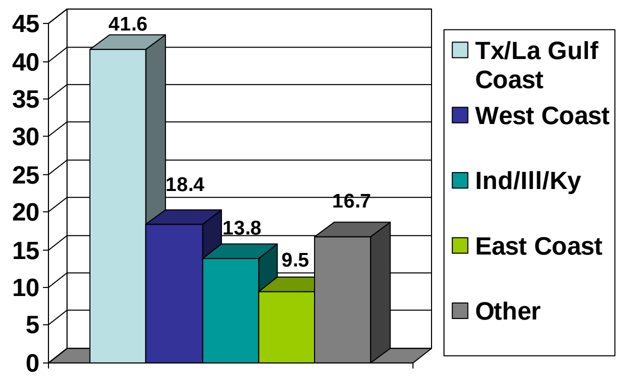
Manufacturing Jobs in Houston

1990 to Present





Texas and Louisiana Gulf Coast Dominate U.S. Refining Capacity



Refining Capacity on the Gulf Coast

Location	Number of Refineries	Capacity (000 b/d)
Houston/Texas City	9	2,291.1
New Orleans/Baton Rouge	7	1,935.0
Beaumont/Lake Charles	11	1,715.7
Corpus Christi	5	706.1

Energy Information Administration

Ethylene Capacity on the Gulf Coast

Location	Number of Crackers	Capacity (000 ton/yr)
Houston/Texas City	16	13,890
New Orleans/Baton Rouge	7	5,380
Beaumont/Lake Charles	8	5,288
Corpus Christi	2	975

Oil and Gas Journal

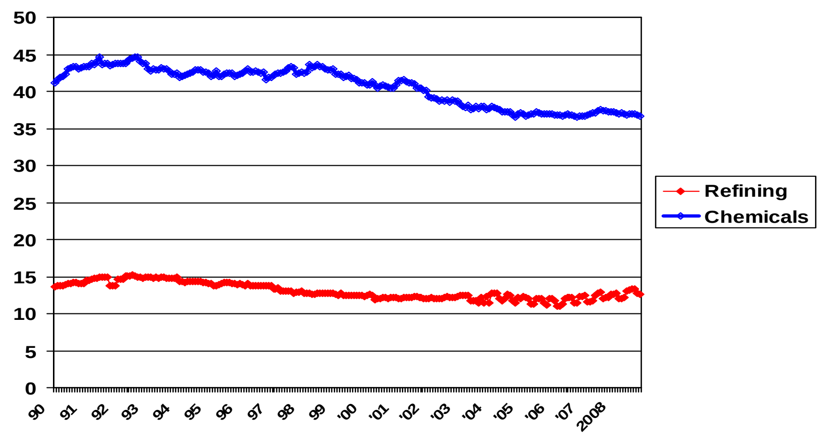
Chemical Plants Affected By Hurricane Rita

(Percent U.S. Capacity Shut Down at Peak)

- Ethylene Steam Cracker: 58.5%
- RG Propylene: 30.7%
- Benzene: 68.5%
- Polyethylene: 63.0%
- Styrene: 85.3%
- Butadiene: 95.8%

Data from CMAI, Inc and expressed as percent of North American Capacity

Houston Employment in Refining and Chemicals



Engineering and Construction Companies in Houston

Company	Local Billings ($ Million)	Local Licensed Engineers	Local Employees
Jacobs	1,700	450	3,500
Shaw, Stone, and Webster	1,200	39	800
Bechtel	938	227	1,300
Mustang Engineering	350	267	2,200
Fugro	272	169	1,492
WorleyParsons	240	144	1,213
ENGlobal	231	106	1,800
CDI Engineering	183	159	1,850

Busiest Ports in the World Based on 2006 Tonnage

Rank	Port	Country	Tons (million)
1	Shanghai	China	537.0
2	Singapore	Singapore	448.5
3	Rotterdam	Netherlands	378.4
4	Ningbo	China	309.7
5	Guangzhou	China	302.8
6	Tianjin	China	257.6
7	Hong Kong	China	238.2
8	Qingdao	China	224.2
9	Busan	South Korea	217.9
10	*Nagoya*	*Japan*	*208.0*
11	*Qinhuangdao*	*China*	*204.9*
12	*South Louisiana*	*U.S.*	*204.6*
13	*Gwangyang*	*Korea*	*202.4*
14	*Houston*	*U.S.*	*201.5*

Houston's Economy Rests on Four Major Roles

- Medicine and the Texas Medical Center
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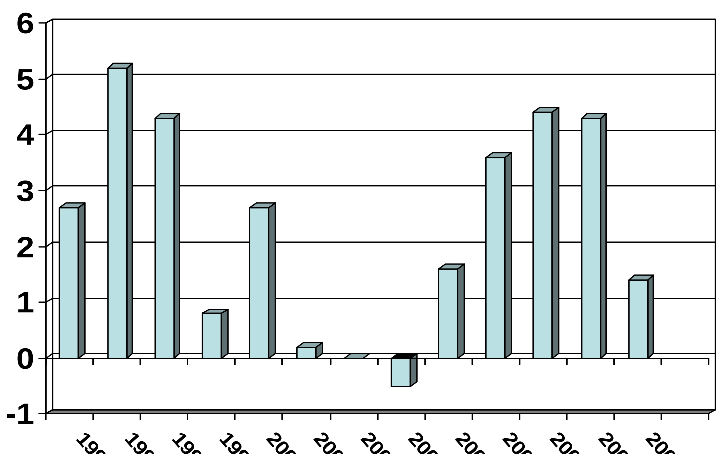
- Upstream Oil Exploration
- Downstream Oil Refining and Petrochemical Production

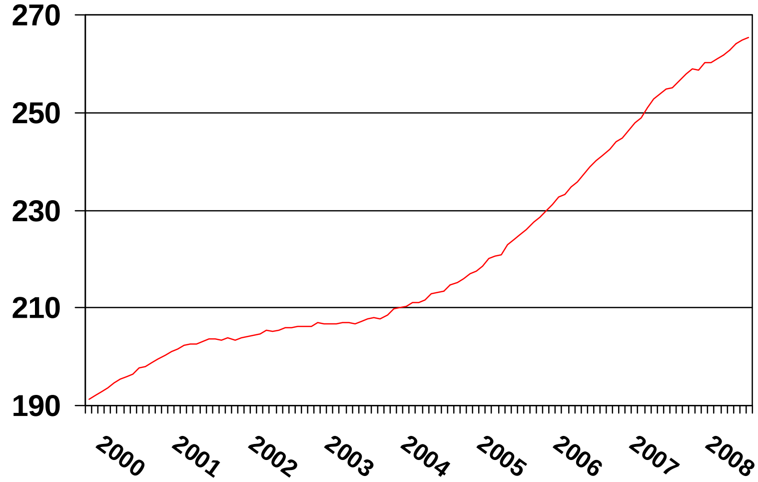
Current Economic Performance

Percent Change in Houston Employment, 1996-2008

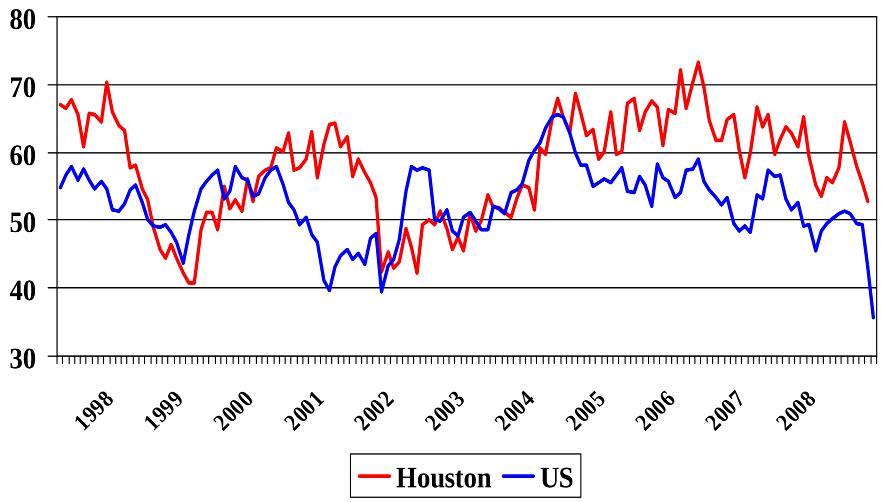


Note: December to December changes, except 2008 which is year-to-date

Houston Index of Coincident Economic Activity: 2000 - present

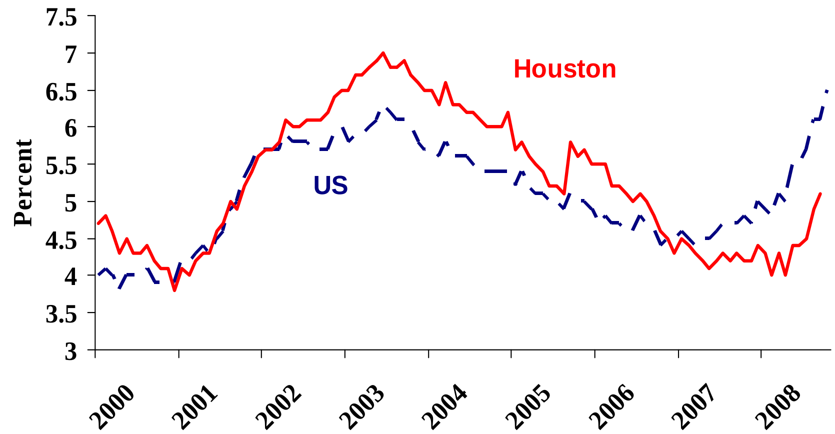


Purchasing Managers' Index US and Houston Compared



Unemployment Rate

Houston vs. US, SA

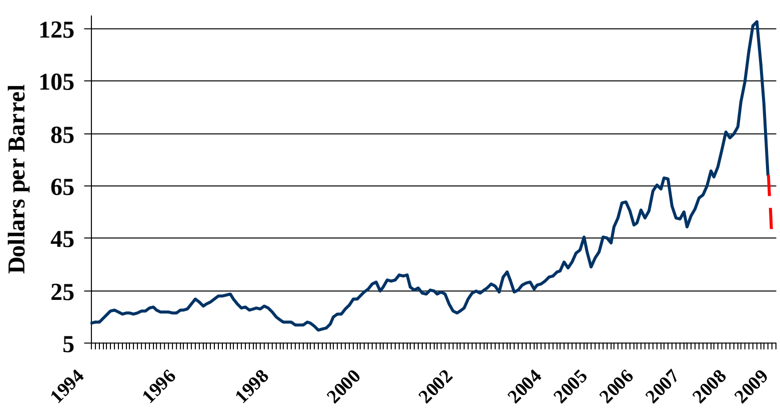


External Forces that Drive Houston

- US Economy
- Global Economic Conditions
- Oil and Natural Gas Markets

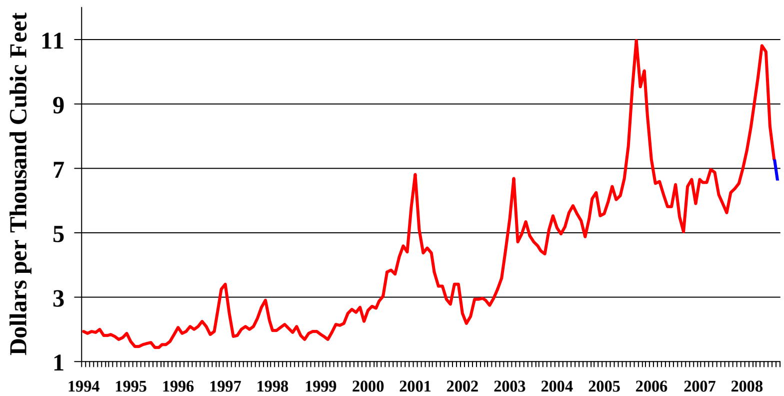
Oil and natural gas have separated Houston from the rest of the country for the last four years …

Refiners' Acquisition Cost of Crude Oil
1994 to Present



Wellhead Price of Natural Gas

1994 to Present



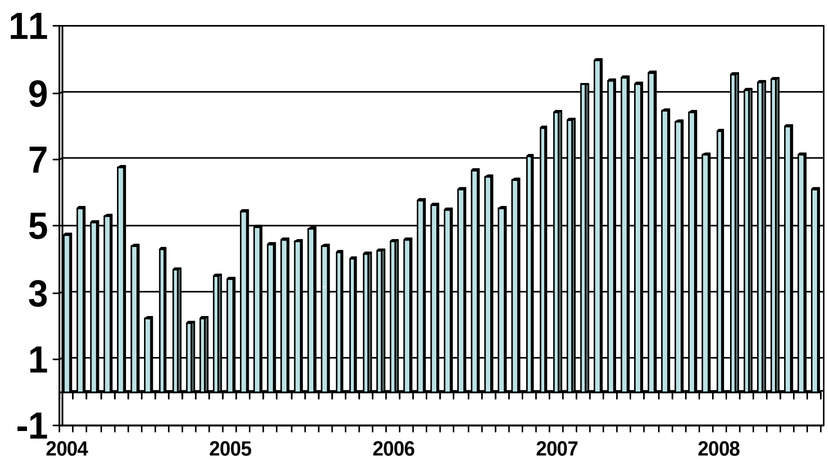
OPEC's Price Band and the Old Paradigm

- In March 2000, OPEC established a price range of $22-$28 for crude oil
- The lower band of $22 was to protect OPEC's revenue at a sufficiently high level
- The upper band of $28 was to keep price from going too high, to avoid offering exploration incentives to non-OPEC producers
- Non-OPEC producers saw this as a range of moderate prices, with likely periodic collapses in price due to slack demand and OPEC-member cheating

Growth in the Demand for Crude Oil
(Annual Percentage Rate)

		1989-2001	2001-2008	1989-2007
OECD	*Total*	*2.0*	*0.7*	*1.5*
	North America	1.8	1.2	1.6
	Europe	1.5	0.3	1.1
	Pacific	3.4	0.0	2.2
	…			
Non-OECD	*Total*	*0.2*	*4.1*	*1.6*
	Former Soviet Union	-7.1	0.4	-4.5
	China	6.1	7.8	6.7
	Other Asia	3.5	3.7	3.6
	Middle East	3.4	5.3	4.1
	…			
World	*Total*	*1.3*	*2.1*	*1.5*

OPEC Spare Capacity Rose in 2006-07
(Percent Sustainable Production)



Excludes Iraq and Angola, and excludes Nigeria, Venezuela and Indonesia from spare capacity calculations. IEA, *Oil Market Report*

Change in World Oil Supplies, 2003-08

(million bbl/d)

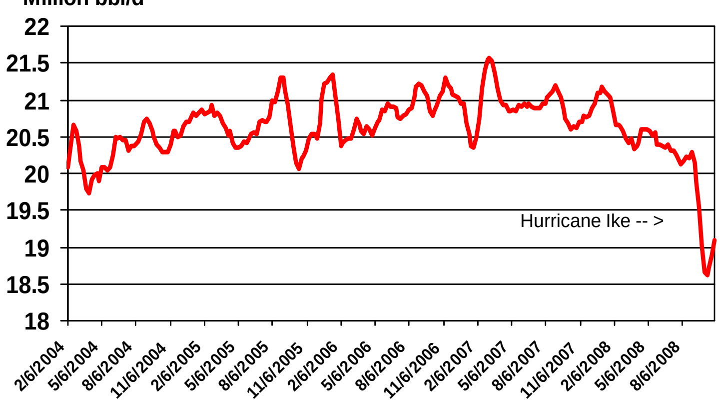
	2003	2008	Change 2003-2008
Non-OPEC	49.1	51.1	2.0
North Am	14.6	14.2	-0.4
Europe	6.3	5.5	-0.8
FSU	10.3	12.9	2.6
OPEC	30.8	36.6	5.8
World	79.8	87.7	7.8

IEA *Oil Market Report*, 2008 data is first half, and OPEC is extrapolated based on crude deliveries only.

Why Haven't Oil Supplies Responded?

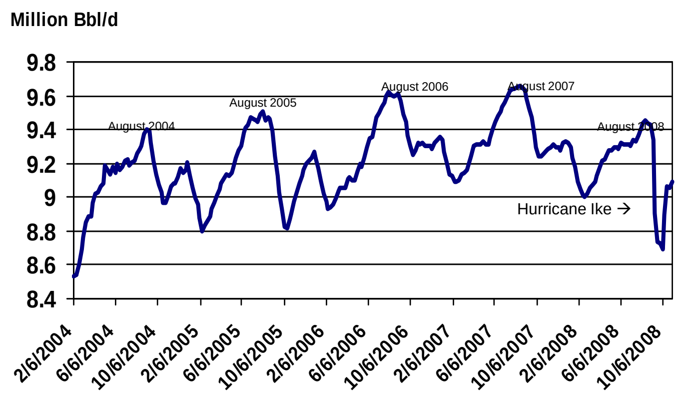
- Reluctance by producers to buy into this price cycle until 2004.
- Global scarcity of equipment and oil-related skills once they did buy into the expansion. This raised the price of oil investment.
- Reluctance to move into or expand exploration in politically unsettled regions. Geologic uncertainty preferred to political uncertainty.
- Oil fields getting smaller, scarcer. Higher prices justified for conventional oil.
- Oil is increasingly coming from unconventional areas that technical barriers in development

US Consumption of Crude Oil, 2004-2008



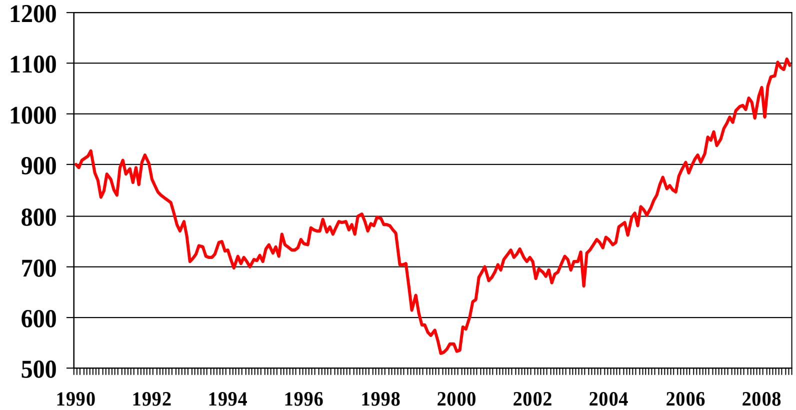
Data from EIA/DOE, four-week average of apparent consumption

US Consumption of Gasoline Finally Chokes at $4/gallon



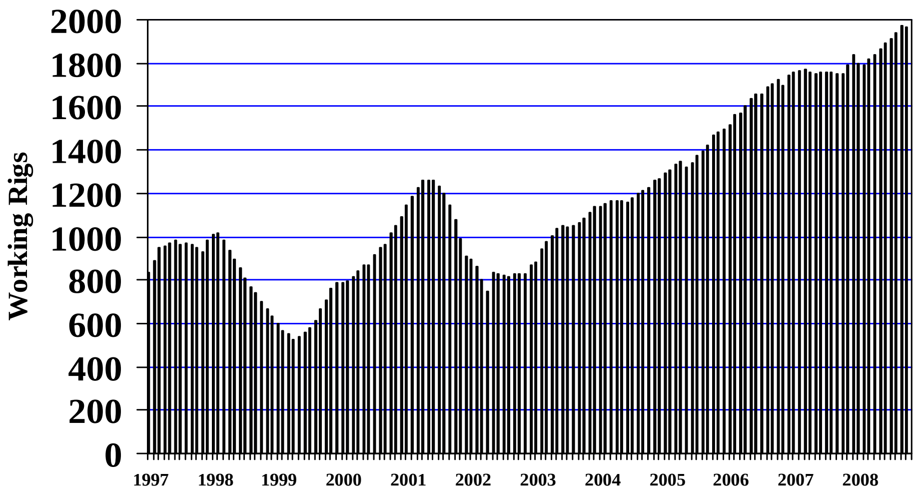
Data from EIA/DOE, four week average of apparent consumption

International Rig Count Highest Since 1982



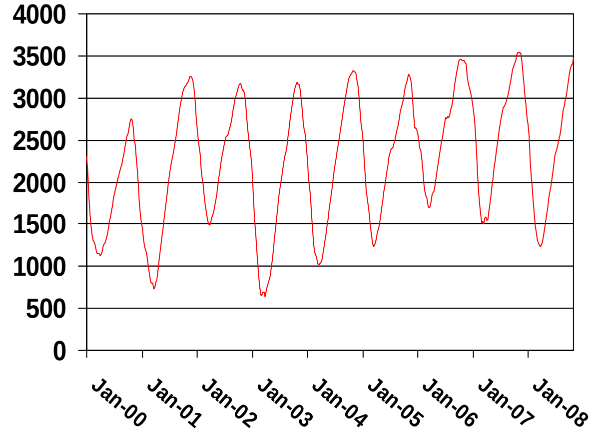
Excludes Iran and the Sudan

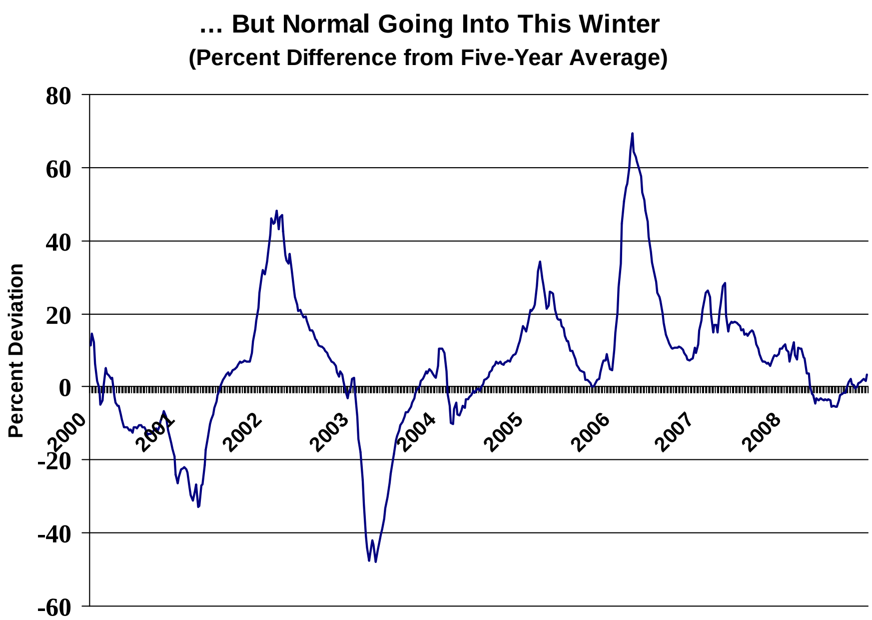
Drilling in the U.S. Slowly Returns to Highest Levels Since 1986



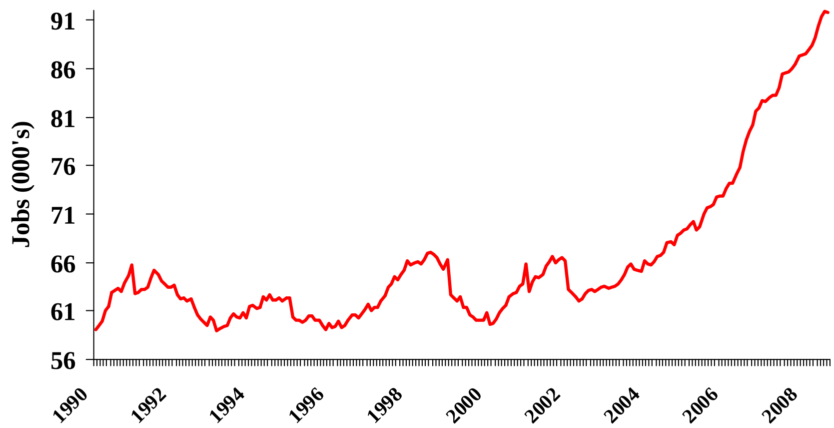
Baker Hughes rig count, seasonally adjusted

High Natural Gas Inventories In Last Two Years …

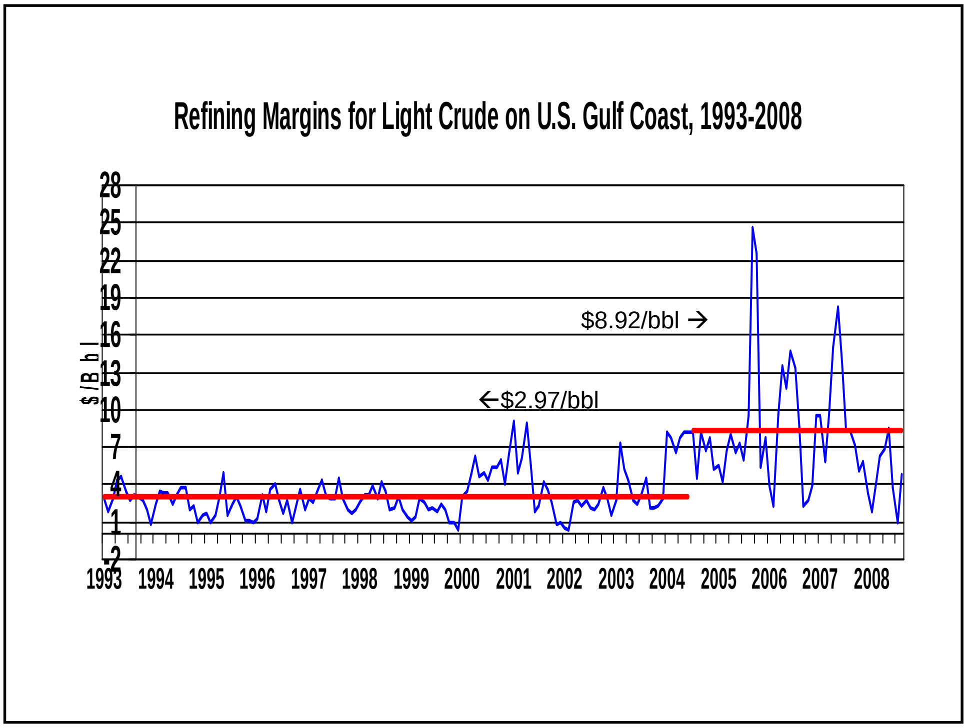


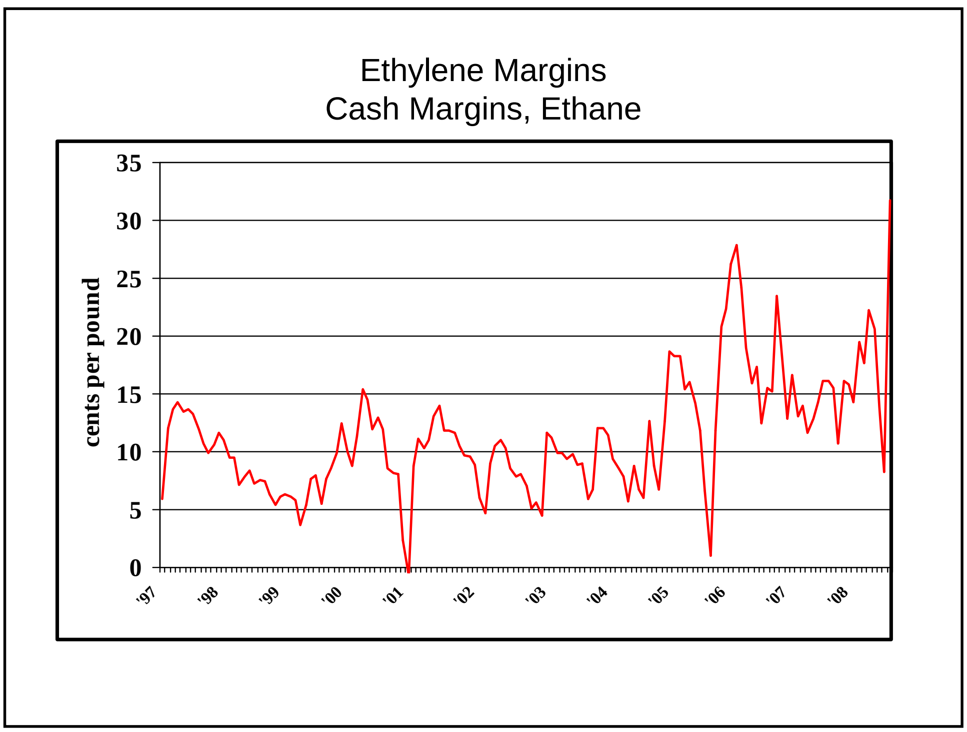


Oil and Natural Gas Mining Jobs in Houston: 1990 to Present



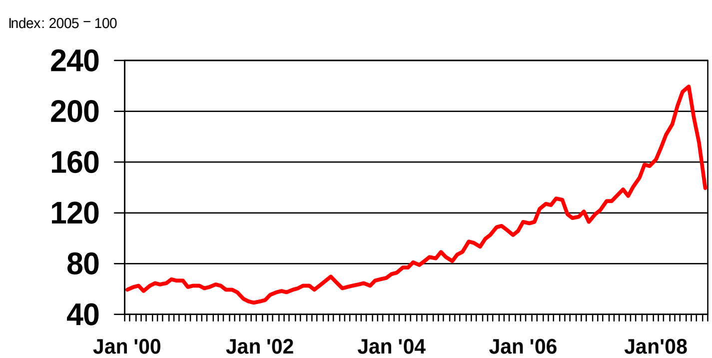
Downstream boomed, too. Now feeling pain of slow growth …

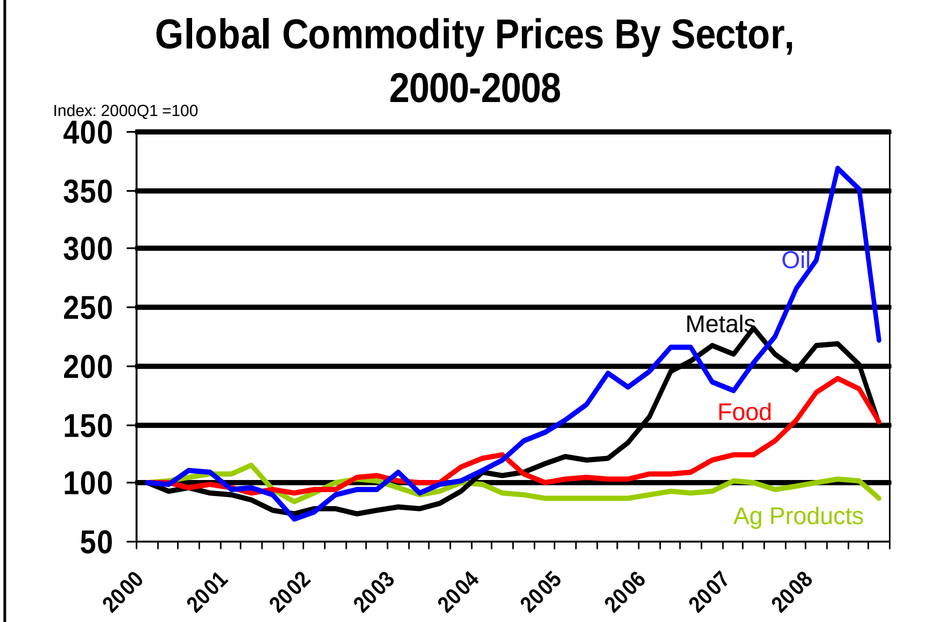

Refining Margins for Light Crude on U.S. Gulf Coast, 1993-2008
$ /B b l
28
25
22
19
16
13
10
7
4
1
-2
$8.92/bbl →
←$2.97/bbl
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008


Ethylene Margins
Cash Margins, Ethane
cents per pound
35
30
25
20
15
10
5
0
'97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08

The global economy drives the commodity boom … and now the bust?

Commodity Price Index: Global Boom ... And Now the Bust?



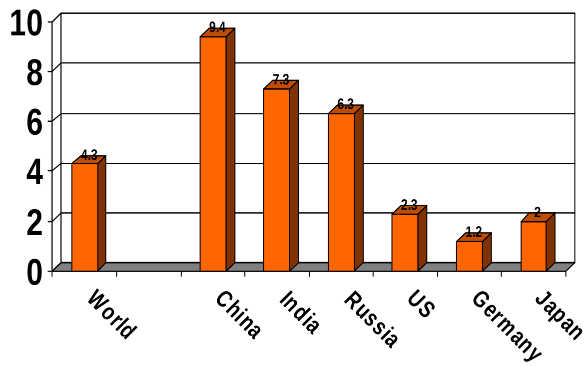


What Was Behind the Commodity Boom?

- *Primarily, it is the growth of the developing world.* From 2002-2007, the IMF estimates they account for 90% of the growth in consumption of oil, 90% of metals' growth, and 80% of food.
- *Dollar depreciation* raises the purchasing power of other currencies, and stimulates the demand for commodities priced in dollars. Raises the price to US consumers.
- *Low U.S. interest rates* (other things equal) can raise the price of commodities by lowering the price of storage, encouraging speculation.

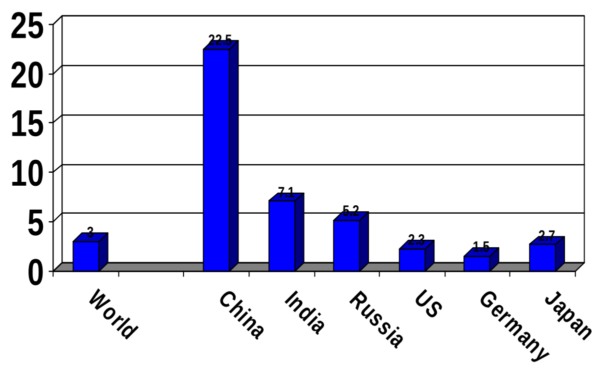
Global Growth Marked By Imbalance Between Developed and Developing Country Growth

(% annual GDP growth 2002-2007)



These Imbalances Even More Pronounced in Industrial Production

(% annual IP growth 2002-2007)



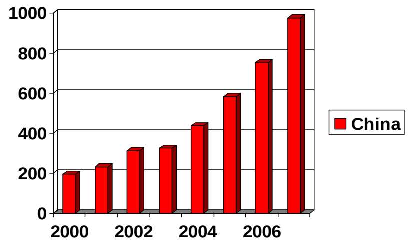
Mexico an Early Neo-Liberal/Pro-Market Model for LDCs to Attract Foreign Investment

- Mexico joins GATT in 1986, signals an opening of the domestic economy to world trade
- Auto reforms of late 1980s
- NAFTA implemented 1994-2004
- Peso floats after 2004
- Financial reform
  - Banking system privatized 1991-92
  - Independent central bank 1991
  - Builds $84 billion in foreign exchange reserves

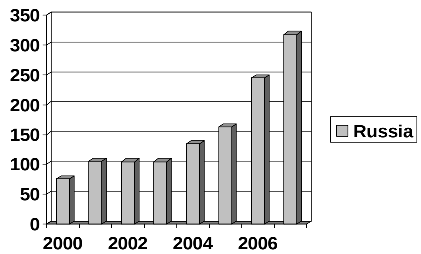
Different Growth Stories

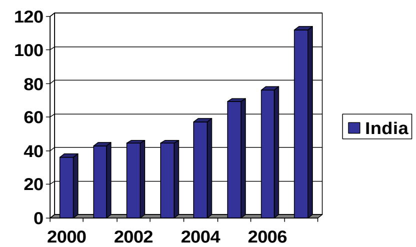
- Russia, China, India all use economic reforms and liberalization to move toward a market model.
- China leverages cheap labor to use manufacturing as to drive growth, while India uses services and Russia oil.
- Exports drive domestic growth in all three countries.

Sell It to the World!: Export Growth Drives LDC Growth



- Growth in Exports 2000-2007
  - China: 499.7%
  - India: 324.1%
  - Russia: 421.2%



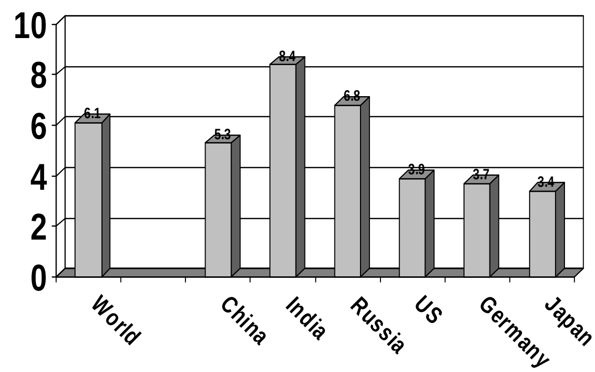


Growth Drives Commodity Use

- Petroleum and metal imports by LDCs initially driven mostly by industrial production and exports.
- Later oil and metals are needed to support consumption as the standard of living rises, e.g., producing and driving autos
- Food prices also follow the standard of living, as diet divesifies.

Growth Differences Narrow -- but Remain -- on Per Capita and Purchasing Power Basis

(% annual growth GDP per capita 2002-2007)

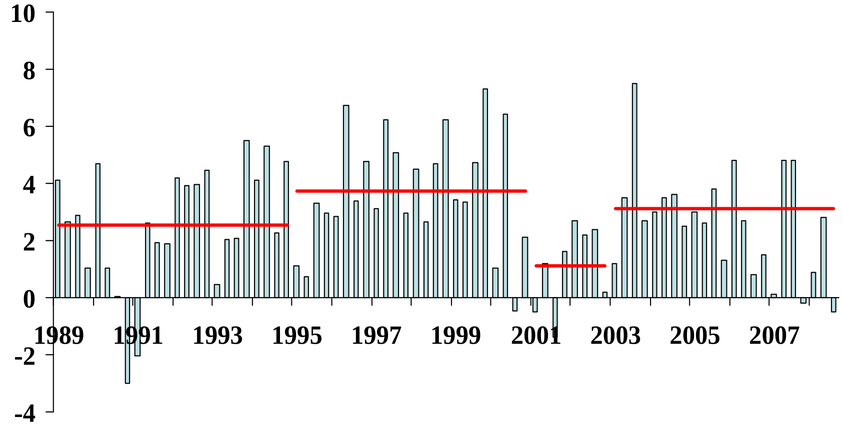


Note: GDP valued at purchasing power parity, i.e., all goods and services valued at US prevailing prices

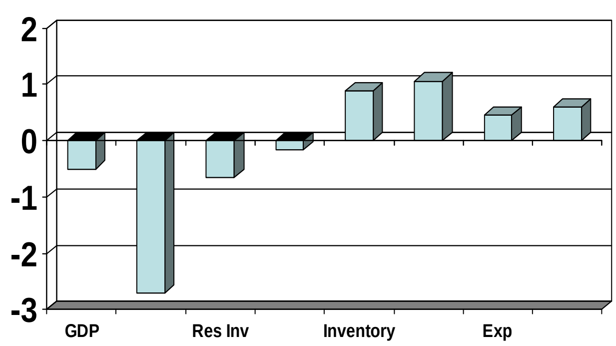
US leads the global slowdown

Gross Domestic Product

Quarterly Percent Growth, Chained 2000 Dollars

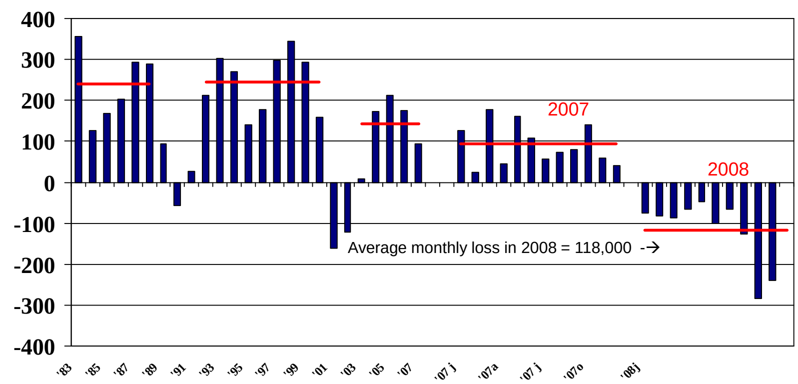


Percent Contribution to 2008 Q3 GDP:By Sector

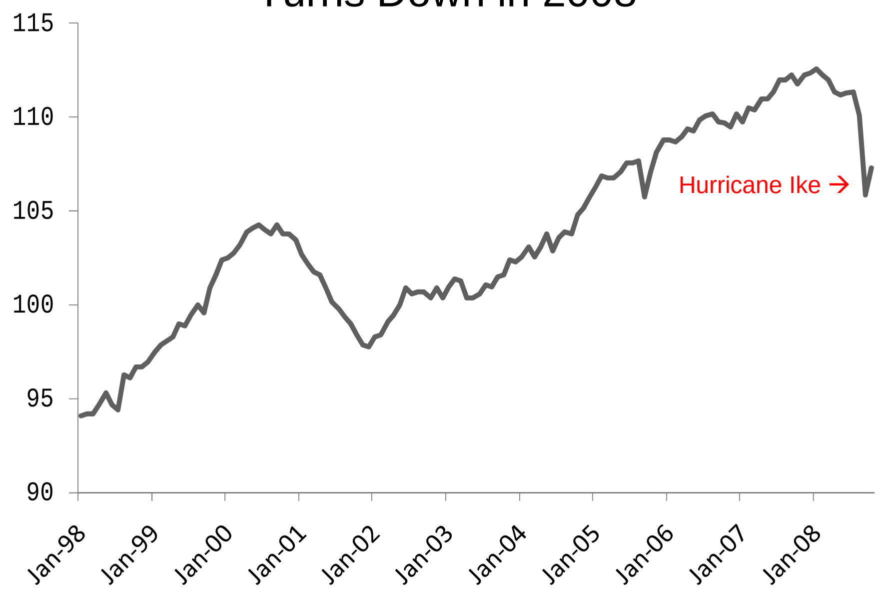


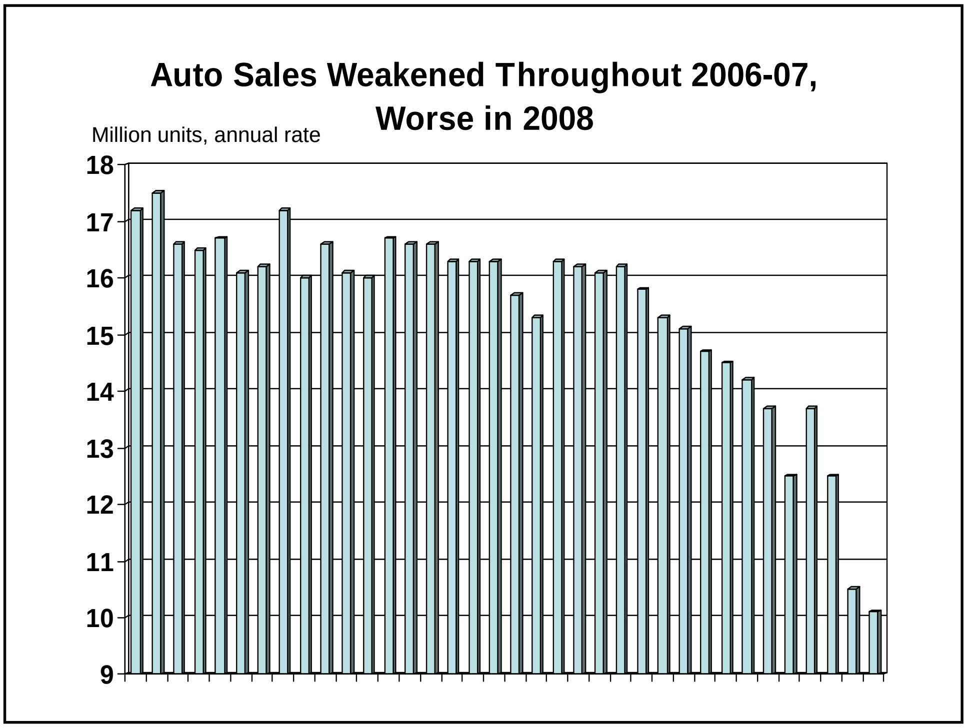
U.S. Employment Growth

In Thousands of New Jobs per Month,1983 to 2008



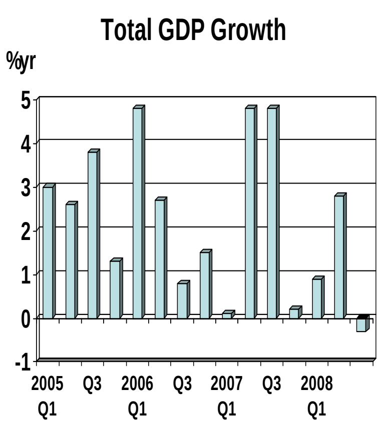
Industrial Production: Growth Turns Down in 2008

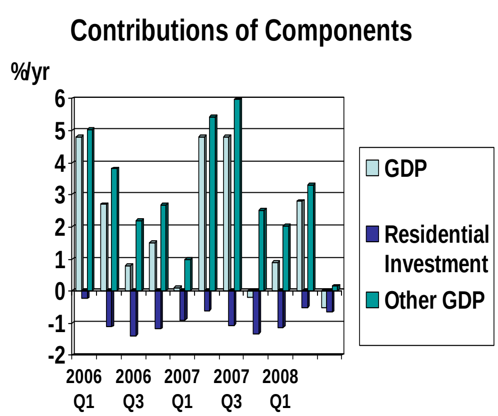


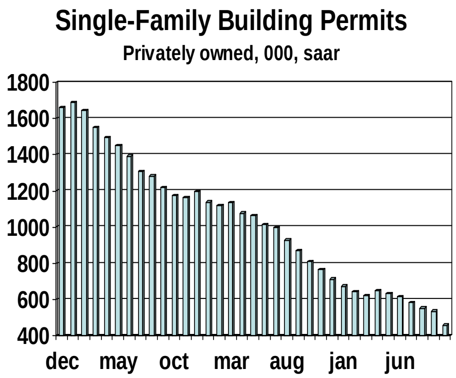


Gross Product Slows in 2006-08

Housing Weakens, Strength Elsewhere Evaporates







Year over year changes*:

New starts -38.0%

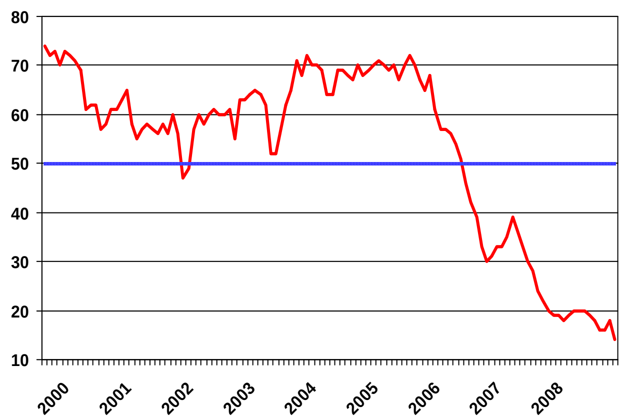
New home sales -40.1%

Existing home sales -1.6%

Existing home price -11.0%

*12-month change Oct to Oct

NAHB Housing Market Index Shows Depth of Pessimism

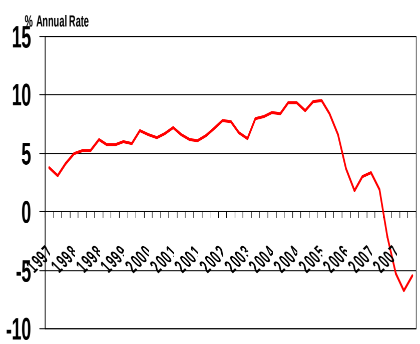


Percent of Local Families that Can Afford Median-Priced Home

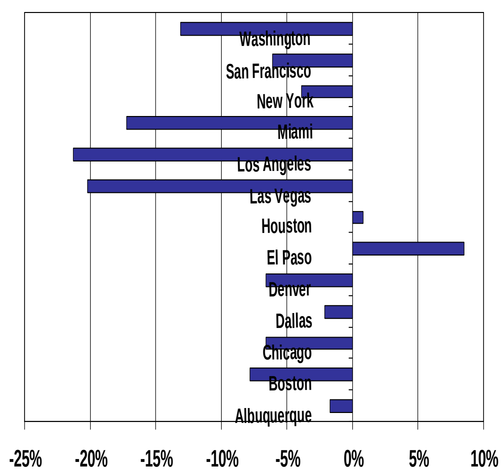
	1999:Q4	2008:Q3	*Low Point*
United States	*64*	*56*	*40*
Los Angeles	43	21	2
New York	55	10	5
Miami	59	22	10
Chicago	61	47	40
Dallas	64	64	54
Houston	66	64	47
Atlanta	73	72	64

Source: Wells Fargo Housing Opportunity Index, by metro area or major division

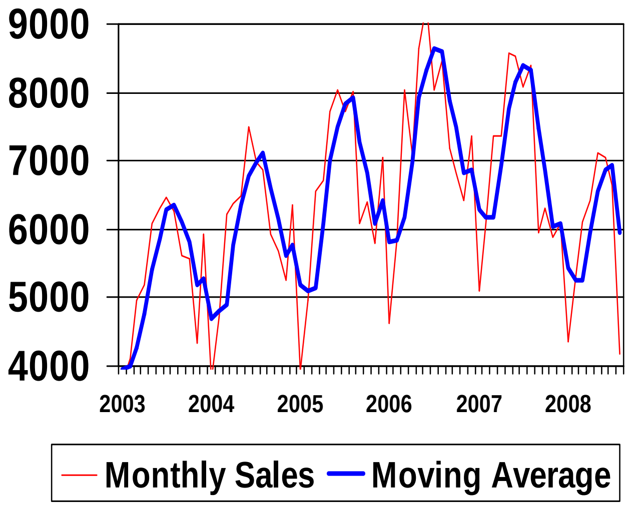
Home Price Appreciation in the US: Percent Change for Repeat Sales



Metro Price Changes: 12-Month Change in Median SF Home Price

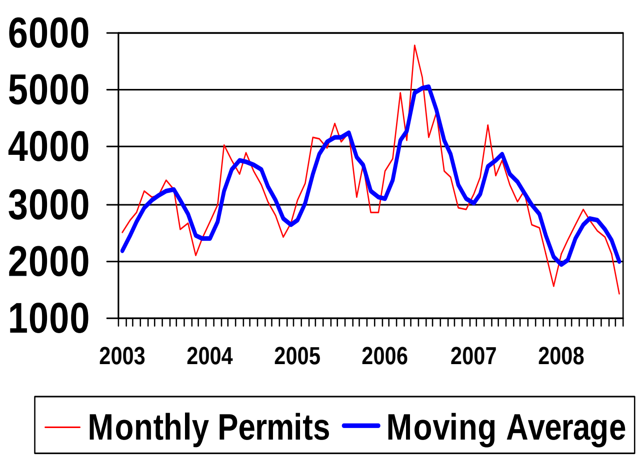


Existing Home Sales in Houston: 2003-2008



Houston Association of Realtors.

Single-Family Permits Issued: Houston 2003-2008



Source: Census and TAMU Real Estate Center

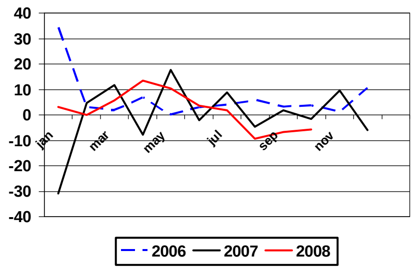
Use of High-Cost Mortgages By Metro Area
(Percent of Mortgages in 2006)

- Detroit 37.2%
- Miami 45.1%
- Dallas-Fort Worth 29.4%
- Houston 33.9%
- Los Angeles 32.3%
- Washington, DC 22.7%
- Phoenix 31.2%
- Chicago 27.2%
- Boston 17.7%
- Atlanta 25.6%
- Philadelphia 18.4%
- New York 22.4%
- San Francisco 22.4%

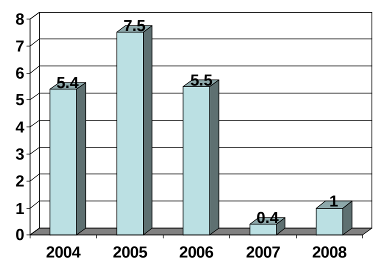
Source: Home Mortgage Disclosure Act

Retail sales, ex autos and gasoline 2004-2008

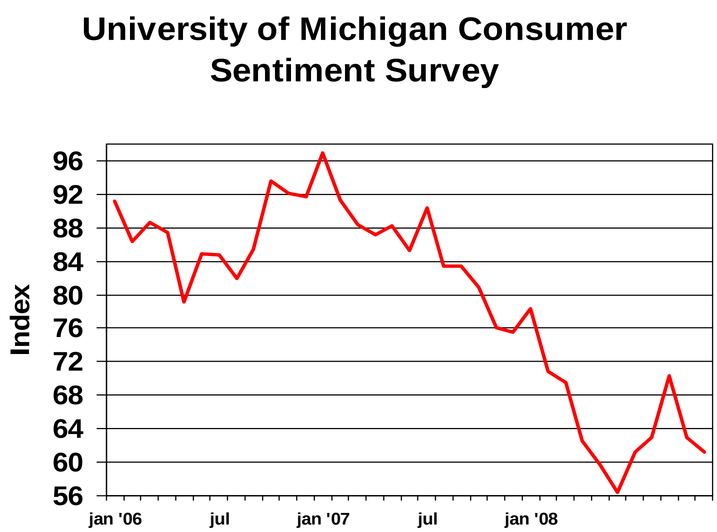
Monthly change at annual rates



October to October changes



Seasonally adjusted data



Survey of Professional Forecasters

Housing Hits Bottom in 2008-09

	Housing Starts (million, at annual rates)	Residential Fixed Investment (% change)	Total Consumption Expenditures (% change)
2008 Q3	.88	-19.1	-3.1
Q4	.81	-20.0	-3.1
2009 Q1	.80	-11.0	-0.0
Q2	.82	-6.9	1.0
Q3	.85	3.1	1.8
Q4	.90	4.4	1.2
2008	.94	-20.9	1.4
2009	.84	-10.6	-0.4

Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters, Nov* 2008

Survey of Professional Forecasters
General Outlook for 2008-09

	GDP (annual rate)	Unemployment Rate (%)	Employment (monthly gain)	Industrial Production (Index)	Non-Res Investment (% change)
2008 Q3	- 0.3	6.0	-216	109.7	-1.0
Q4	-0.4	6.6	-222	108.4	-8.2
2009 Q1	0.9	5.7	-219	107.4	-9.5
Q2	2.0	7.0	-108	107.2	-7.3
Q3	3.3	7.6	-7	107.5	-2.5
Q4	4.2	7.7	19.6	108	-0.3
2008	3.7	5.7	-15.1	110.4	-2.7
2009	1.9	7.4	-130.1	107.5	-5.7

Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters, Nov 2008*

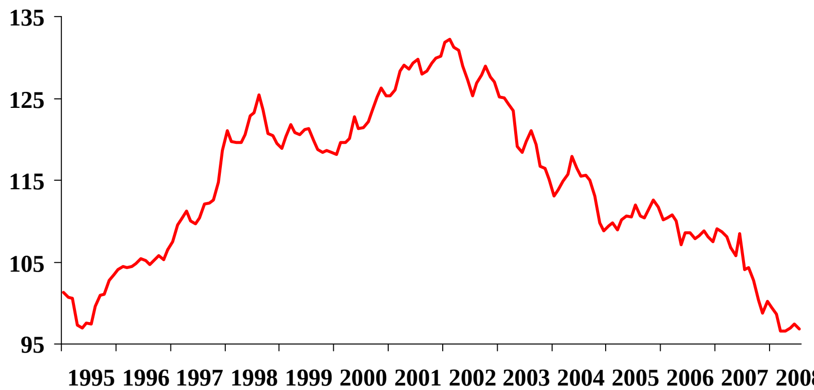
Current US Outlook

- The U.S. economy slowed in 2006-2007 along with housing and autos. Growth flirted with stall speed throughout 2008, and the latest financial shock has tilted it into recession.
- Expectations that housing might stabilize in 2008 were too optimistic, especially for new construction.
- The consumer has pulled back *hard* on spending. Fatigued by high and food gasoline prices, falling home prices, losses in 401(k), now add the weak job market as one more reason for concern.
- Recession? Now we know – it began December 2007. How long? How deep? Recent data are now consistent with the most serious US economic downturn in 25 years.

Can the developing world carry the day?

Trade Weighted Value of the Dollar

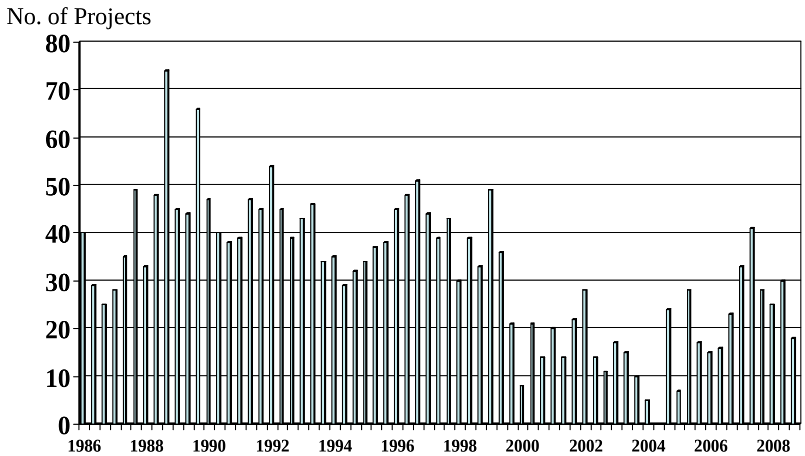
1995 to Present



Atlanta Fed Dollar Index

New Hydrocarbon Project Announcements

Texas and Louisiana Gulf Coast, 1986 to Present



IMF World Economic Outlook Annual Percent Growth

	2006	2007	2008	2009
World	**5.1**	**5.0**	**3.7**	**2.2**
US	**2.9**	**2.0**	**1.4**	**-0.7**
Devel. Asia (China)	**9.9 (11.6)**	**10.0 (11.9)**	**8.3 (9.7)**	**7.1 (8.5)**
Euro Area	**2.8**	**2.6**	**1.2**	**-0.7**
Japan	**2.4**	**2.1**	**0.5**	**-0.2**

Source: IMF, *World Economic Outlook -- Update*, November 2008

Can Emerging Country Growth Really Decouple from the US, Europe and Japan?

- Strong internal growth dynamics
- A rising share of the global economy
- More resilient policy framework
- But spillovers from the developed world still a factor – accounting for maybe 35 percent of growth for emerging economies, 45 percent for more commodity dependent

Largest Economies in World in 2007

($ trillion of PPP)

World	$65.6
European Union	$14.4
United States	$13.8
China	$7.1
Japan	$4.3
India	$3.0
Germany	$2.8
United Kingdom	$2.1
Russia	$2.1
France	$2.1
Brazil	$1.8
Italy	$1.8

China + India + Russia = $12.2 trillion

What does it mean for Houston?

For Houston? Where Does the Chain End?

- Slow growth in the US economy, and the rest of the developed world?
- Slowdown in the developing world to follow?
- A pull back in the commodity boom, and in oil markets?
- Finally, a setback in Houston?

Houston Job Growth Slows, But Much Faster than U.S.

(Growth at Annual Rates)

	U.S.	Houston
1-Month	-2.1	0.8
3-Month	-1.9	2.3
6-Month	-1.3	2.1
12-Month	-0.8	2.5
24-Month	0.1	3.2

Comparison through most recent available, data seasonally adjusted

End of the Boom?

- The end of the commodity boom of 2004-2008 seems to be upon us. Driven by strong demand, recession in the US, Europe, and other countries is now quickly driving prices down.
- How low? Depends on the depth of the US recession, and the ability of Russia and developing Asia to carry growth without US help.
- How long? These are cyclical industries, going through another cyclical event. As the US and Europe recover, will developing Asia get back on the same strong growth path? Will we be seeing the boom repeated in two or three years?