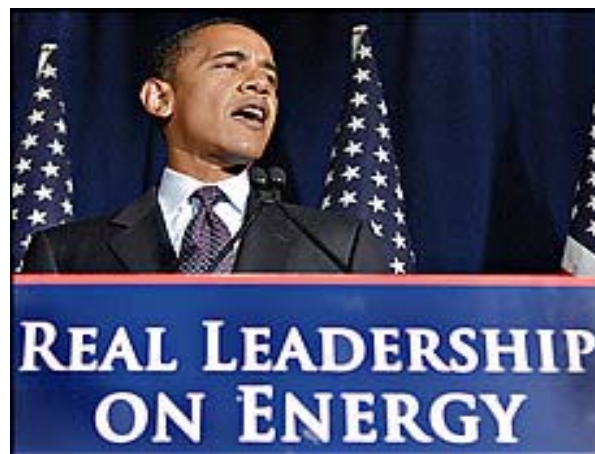


IEA World Energy Outlook 2008

Introduction



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- **Upcoming Releases**

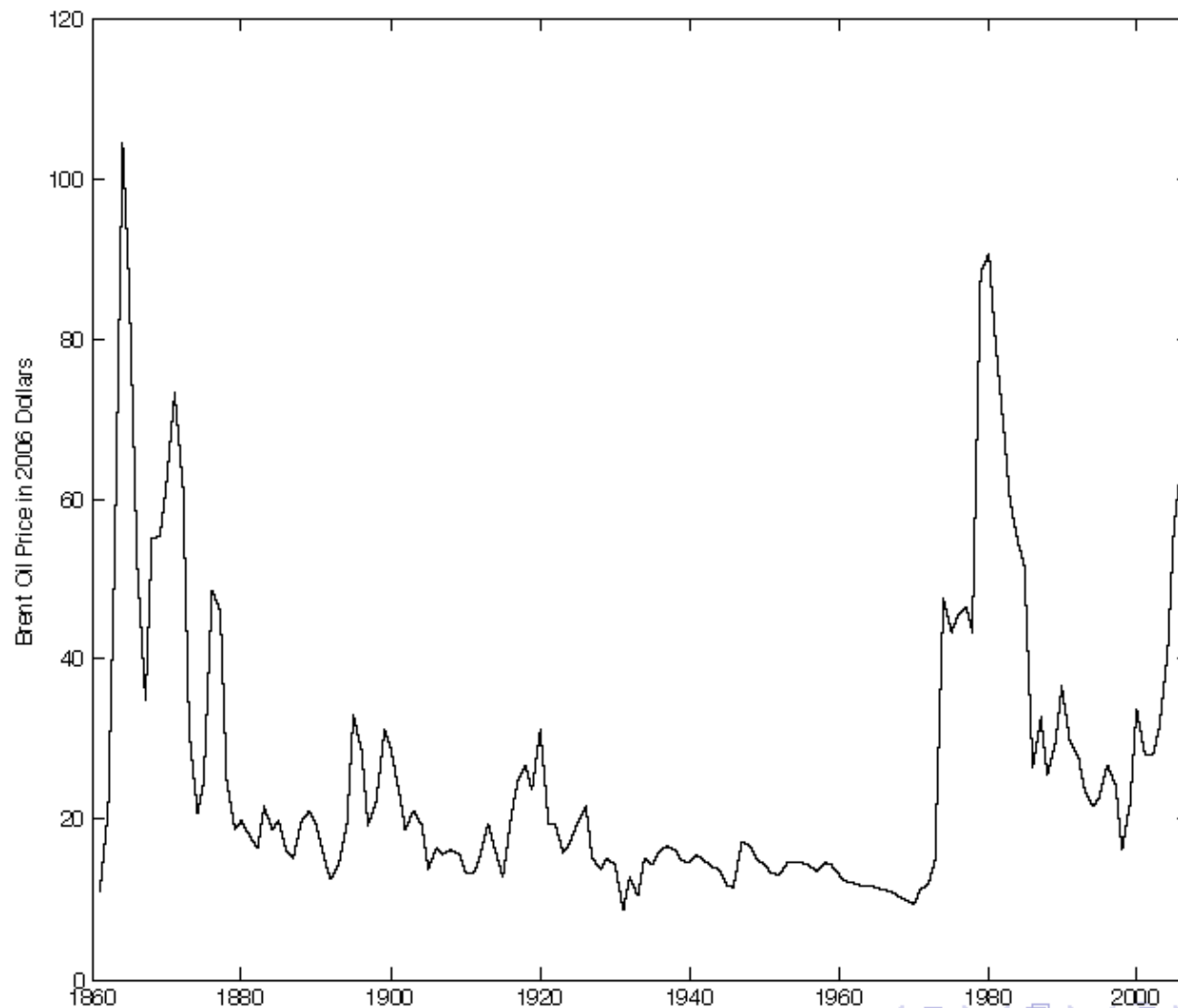
- *Beyond Science: The Economics and Politics of Responding to Climate Change Conference Report, December 2008*
- *Towards a Sustainable U.S. Biofuels Policy, January 2009*

- **Ongoing Studies**

- *Energy Market Consequences of an Emerging U.S. Carbon Management Policy*
- *Energy Market Consequences of Emerging Energy and Climate Policy in China*
- *The New Petrodollar Cycle: Impacts, Implications and Policy Responses*
- *Russia and the Caspian in the Global Energy Balance*
- *The Texas Electricity Study: Integrated Economic, Environmental and Reliability Modeling of Power System Growth in Texas*

Coincidence of High Oil Prices with Financial Crises

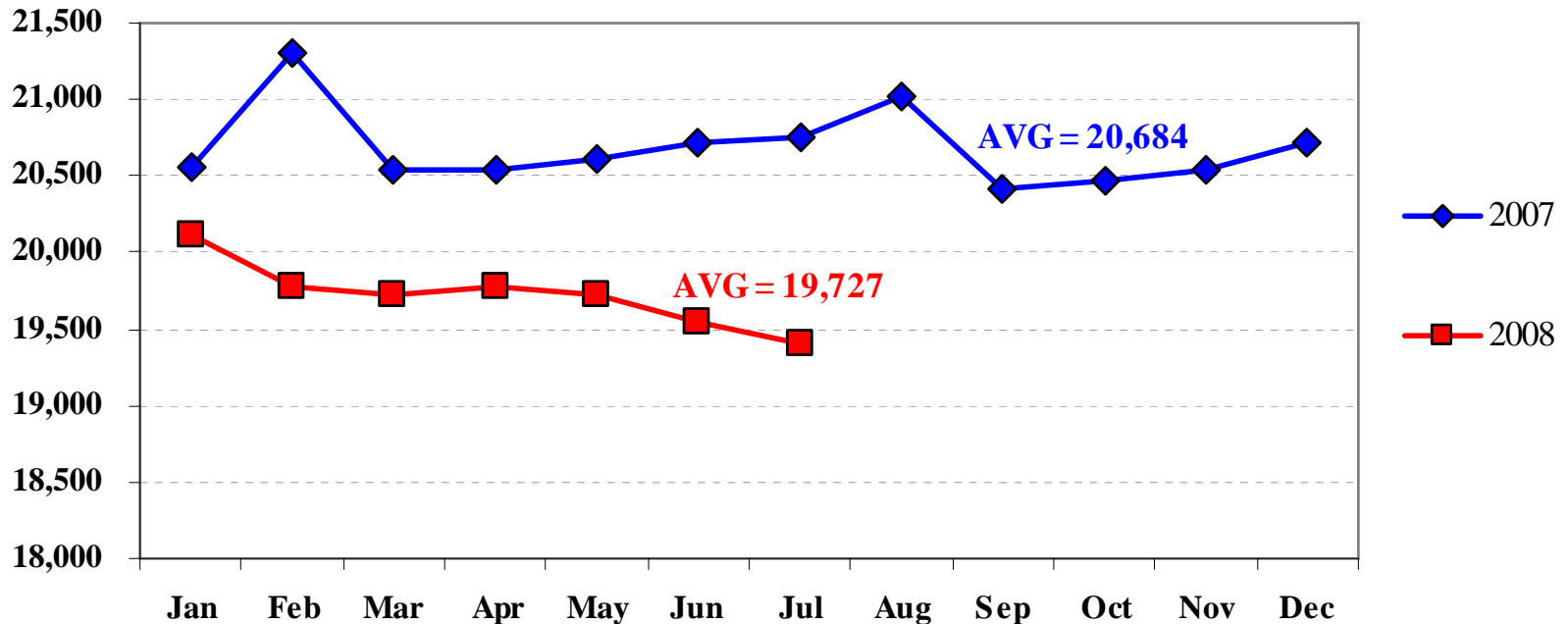
Currency & Banking Crises Severest 1850s-70s, 1970s-



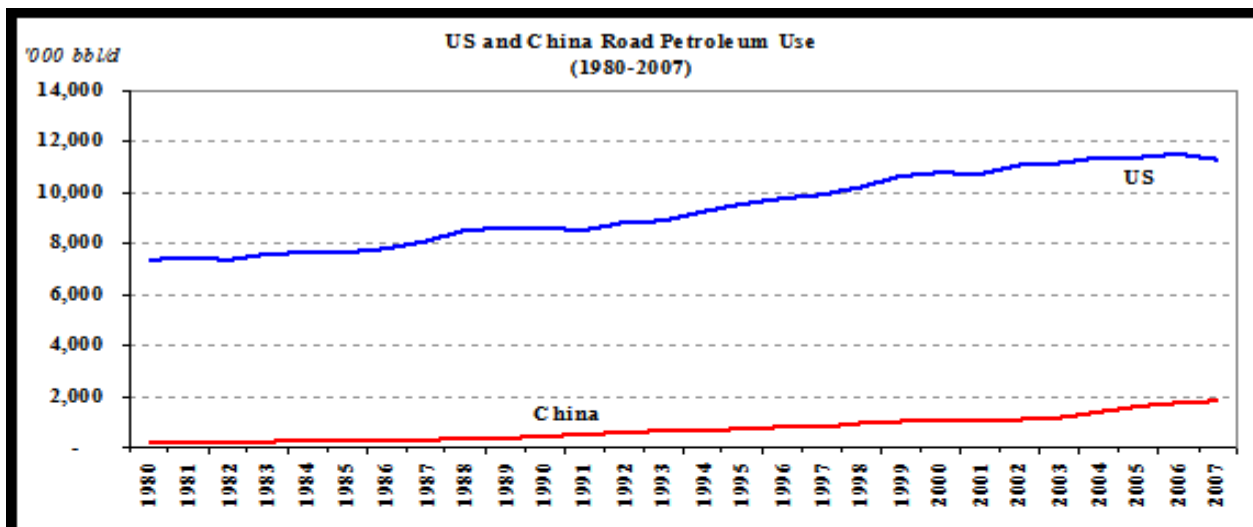
US Oil Demand

- Summer gasoline demand took a nose dive this year.
 - Demand in July 2008 was down by 6% relative to July 2007, reflecting consumer response to oil prices that were nearly double the prior year. The drop also reflects the economic slowdown.

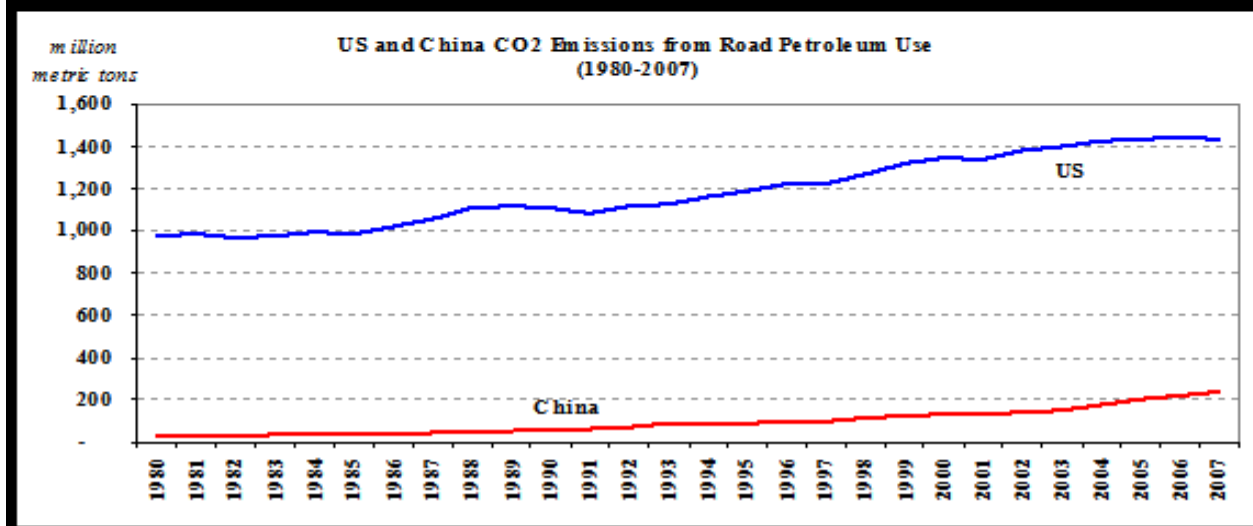
'000 bbl/d



- Bubble Driving Myth: China has replaced the US as a “driving” force
- 250 million U.S. vehicles vs China’s 26 million vehicles on the road



Source: EIA



Source: EIA, IEA and own calculations

Bubble Driving Myth : Only US Demand will be affected because a) US economy is decoupled from rest of world b) price subsidies will shield demand in other countries

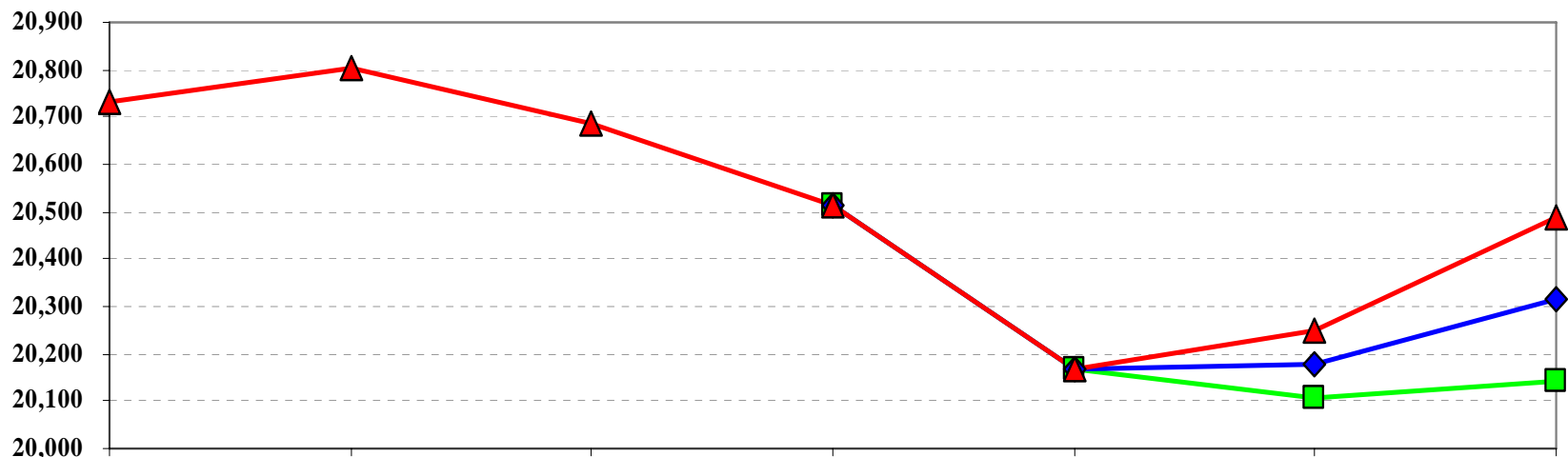
Source: Energy Intelligence

(<i>'000 b/d</i>)		Chg. vs.		Chg. vs.		Chg. vs.		Chg. vs.		Chg. vs.
Main Markets	May '08	May '07	June '08	June '07	July '08	July '07	Aug. '08	Aug. '07	Q2'08	Q2'07
United States	20,180	-2.66%	20,037	-3.42%	20,052	-3.40%	19,951	-5.10%	19,897	-4.30%
Japan	4,586	4.10%	4,806	4.59%	4,534	-1.30%	4,602	-0.50%	4,792	-11.80%
Europe Big 4	7,498	-2.38%	7,608	-4.00%	7,669	-3.20%	7,788	0.20%	7,645	-2.80%
OECD G-7	34,978	-1.53%	35,169	-2.53%	34,957	-3.10%	35,169	-3.00%	34,977	-5.10%
Other OECD	12,642	1.49%	12,580	-0.99%	12,572	0.90%	12,845	0.16%	12,671	1.70%
Total OECD-30	47,620	-0.75%	47,749	-2.13%	47,529	-2.60%	48,014	-2.20%	47,648	-4.40%
Ex-USSR	3,955	-5.54%	4,124	3.20%	3,996	0.00%	4,536	-4.80%	4,141	12.20%
China	8,195	6.77%	8,857	15.49%	8,043	4.90%	7,905	5.50%	8,317	13.40%
Other Non-OECD	26,725	5.49%	26,060	3.90%	26,196	4.20%	25,535	2.07%	26,186	4.30%
Total Non-OECD	38,875	4.50%	39,051	6.27%	38,235	4.10%	37,976	2.40%	38,644	7.60%
Total World	86,495	1.55%	86,801	1.48%	85,764	0.30%	85,990	-0.20%	86,292	0.60%

US Oil Demand

- Demand is influenced by a number of factors.
 - Income, Price, Weather (heating load), Vehicle efficiency
 - Short run elasticities estimated as:
 - Price = -0.0508 ... Thus, a 1% increase in price would result in a decline in demand of 0.05%.
 - Income = 0.3518 ... Thus, a 1% decline in GDP would result in a decline in demand of 0.35%.
 - Fuel Efficiency = -0.7906 ... Thus, a 1% increase in efficiency would result in a decline in demand of 0.79%.
 - HDD = 0.1654 ... Thus, a 1% increase in HDD (colder weather) would result in an increase in demand of 0.17%.
 - Majority of adjustment occurs within a decade (lag coefficient = 0.4567)
- The last four years and what we might expect for 2008-2010...


'000 bbl/d



	2004	2005	2006	2007	2008	2009	2010
GDP growth ...	3.64%	2.94%	2.78%	2.03%	0.5%	2%, 1%, 0%	3%, 2%, 1%
Price	\$ 33.80	\$ 44.56	\$ 51.78	\$ 56.77	\$ 90.79	\$ 86.34	\$ 83.20
HDD	4290	4315	3996	4255	4463	4463	4463
Fuel Eff	17.1 mpg	17.1 mpg	17.2 mpg	17.4 mpg	17.5 mpg	17.5 mpg	17.6 mpg

Retail Gasoline/WTI Relationship

Crude Oil (\$/bbl)	Wholesale Gasoline (\$/gallon)	Retail Gasoline (\$/gallon)
\$10.00	\$0.27	\$0.92
\$20.00	\$0.55	\$1.23
\$30.00	\$0.84	\$1.53
\$40.00	\$1.12	\$1.83
\$50.00	\$1.40	\$2.13
\$60.00	\$1.68	\$2.43
\$70.00	\$1.96	\$2.73
\$80.00	\$2.24	\$3.03
\$90.00	\$2.52	\$3.33
\$100.00	\$2.80	\$3.63
\$110.00	\$3.07	\$3.93
\$120.00	\$3.36	\$4.23
\$130.00	\$3.64	\$4.53
\$140.00	\$3.92	\$4.83
\$150.00	\$4.20	\$5.13
\$160.00	\$4.48	\$5.43
\$170.00	\$4.76	\$5.73
\$180.00	\$5.04	\$6.04
\$190.00	\$5.32	\$6.34
\$200.00	\$5.60	\$6.64

	Cap-and-Trade	Higher CAFE	Renewable Energy Standard	Drill Offshore?	Tax on Big Oil	Tax Credits
	<ul style="list-style-type: none"> •Yes: reduce emissions 80% from 1990 levels by 2050 •100% permit auction •Supports Low Carbon Fuel Standard 	<ul style="list-style-type: none"> •Increase fuel economy beyond 35mpg •52 mpg by 2025 	<p>25% by 2025</p>	<ul style="list-style-type: none"> •Supports limited offshore drilling (1Aug2008) •Prioritize the Construction of the Alaska Natural Gas Pipeline 	<ul style="list-style-type: none"> •Proposes giving working families \$1,000 energy rebate; paid from oil companies' profits •Proposes selling 70million barrels of oil from reserves to lower current gasoline prices (4Aug2008) •(Proposes eliminating need for oil from Middle East & Venezuela in 10 years) 	<ul style="list-style-type: none"> •Proposes \$7,000 tax credit on the purchase of fuel-efficient cars •Proposes that new vehicles sold in US are flex-fuel by the end of his first term: \$4 billion in loans/ tax credits to U.S. auto plants •Supports extending tax credit for renewable energy production

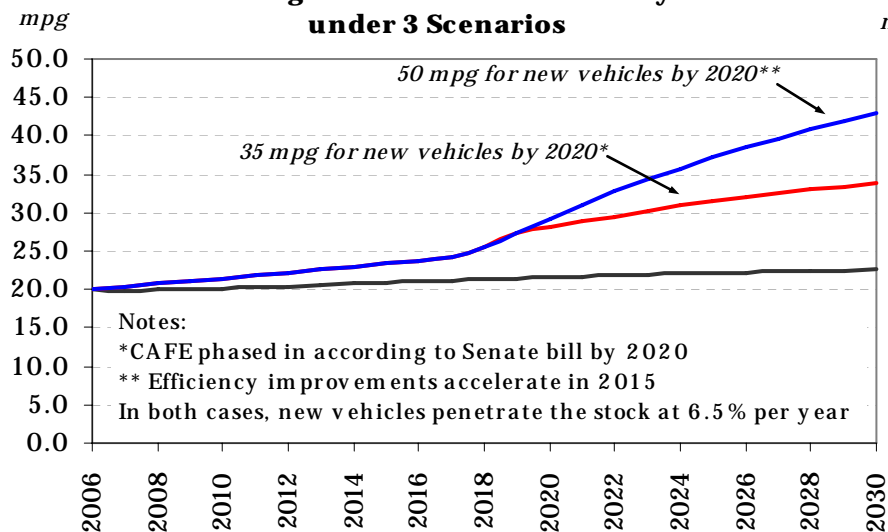
Climate and Energy Security Policy Will Focus Heavily on Promoting or Regulating Automobile Efficiency

- Most forecasts indicate that future growth in global oil demand will come almost entirely in the transportation sector
- Technology and policy, therefore, will be vital to determining the pace of oil demand growth
 - European demand has been flat due to effective policies
 - U.S. is now following suit
 - California Low Carbon Standard aimed to drive innovation in the efficiency of vehicles and alternative transportation fuel
 - The extent to which China and India, in particular, also get into the act is very important to future demand growth in developing Asia

New U.S. Efficiency Standards Will Reduce U.S. Oil Demand

- Fuel efficiency improvements have significant benefit, but are offset by growth in vehicle stocks and miles driven (income and “rebound” effects)
 - High prices are revealing a demand response as recent U.S. miles driven data are slightly lower
- Similar arguments hold in all countries, with potential for efficiency improvement varying across countries
- Policy is multi-pronged in its approach
 - A technological breakthrough, such as with plug-in hybrid vehicles, could push demand lower into the future. Once these alternatives are adopted, the market is forever changed
 - Biofuels can induce even further reductions in demand

U.S. Light Vehicle Fuel Efficiency under 3 Scenarios



U.S. Motor Fuel Use under 3 Scenarios

