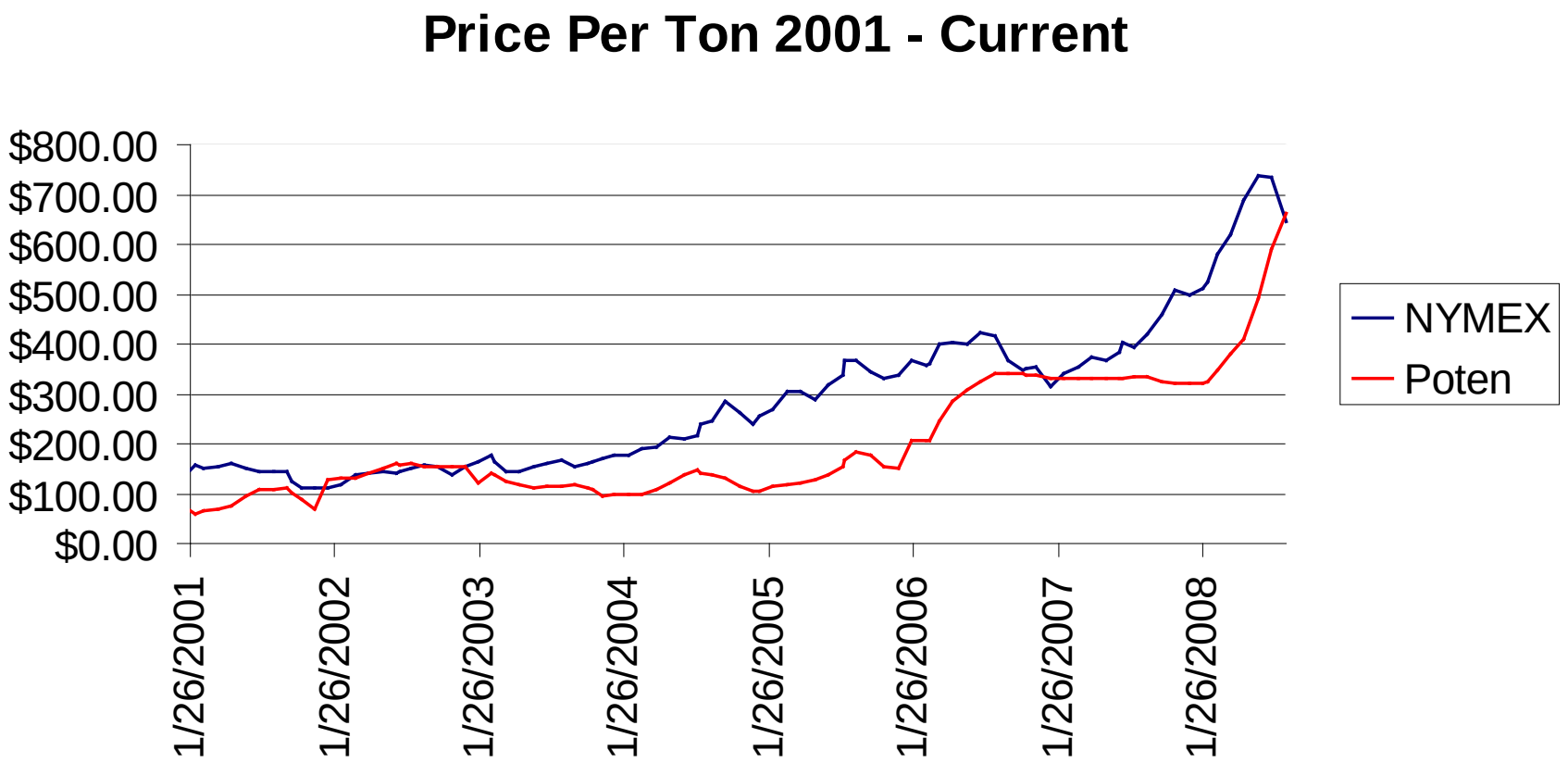
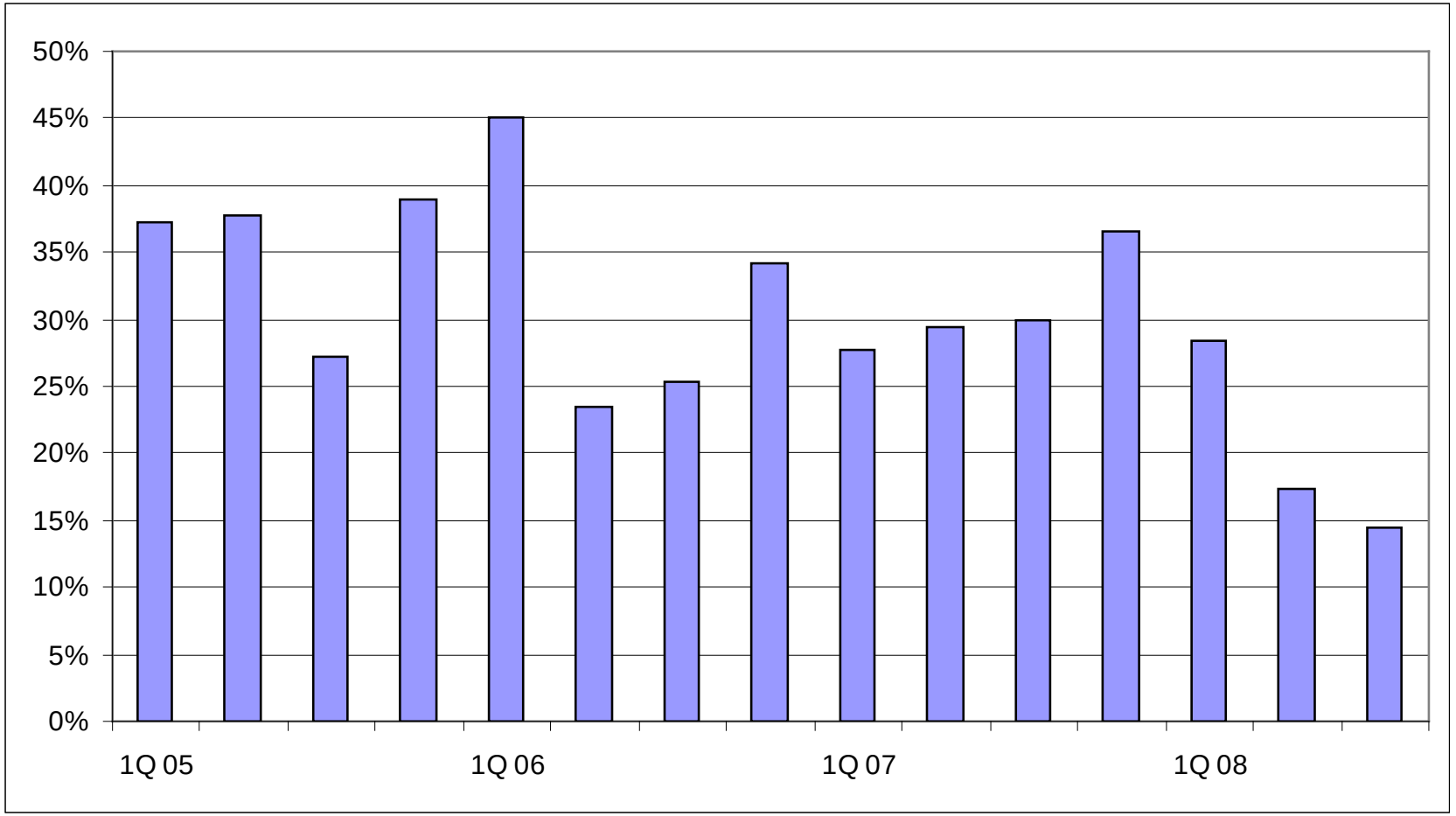
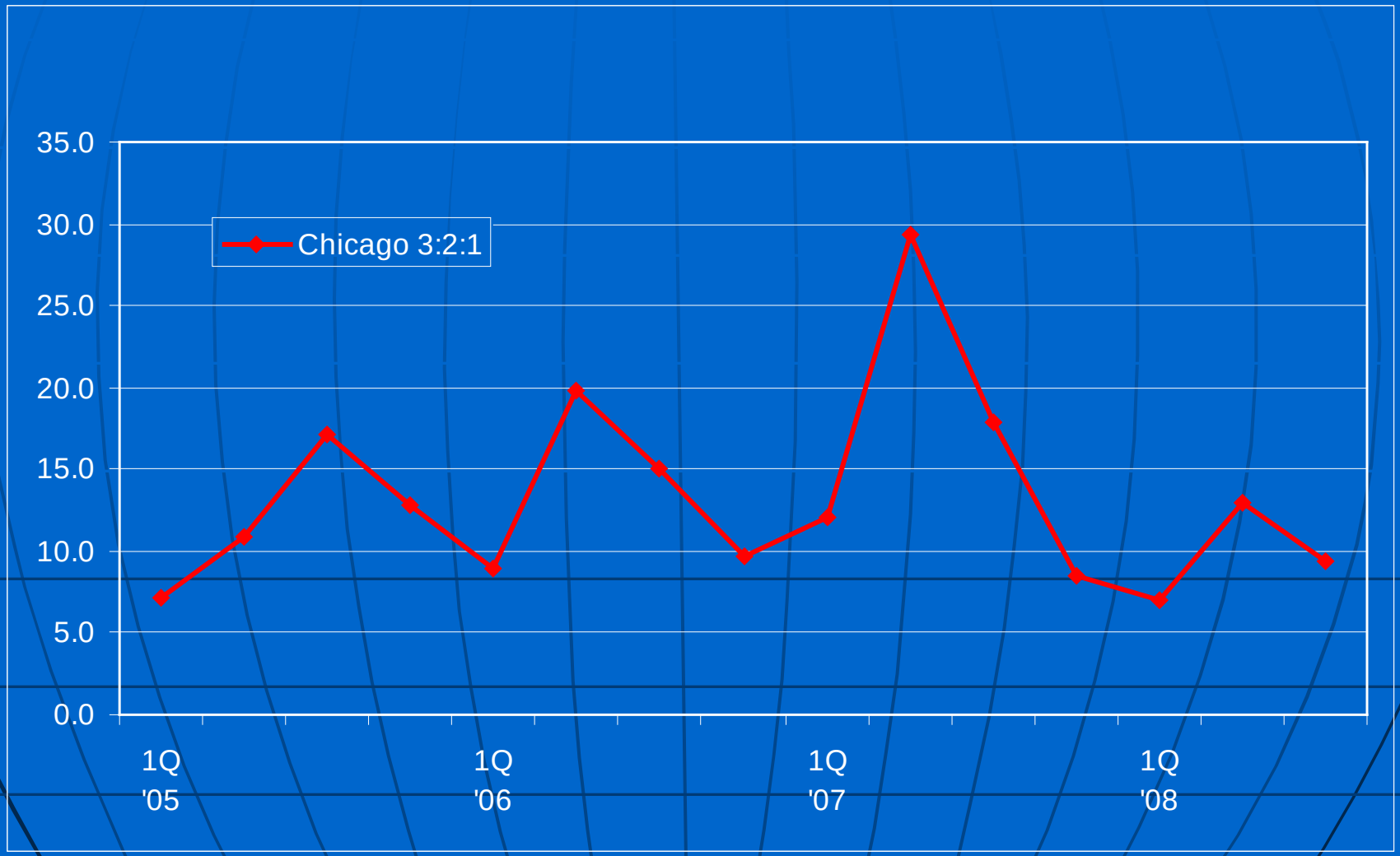
Crude Vs. Asphalt



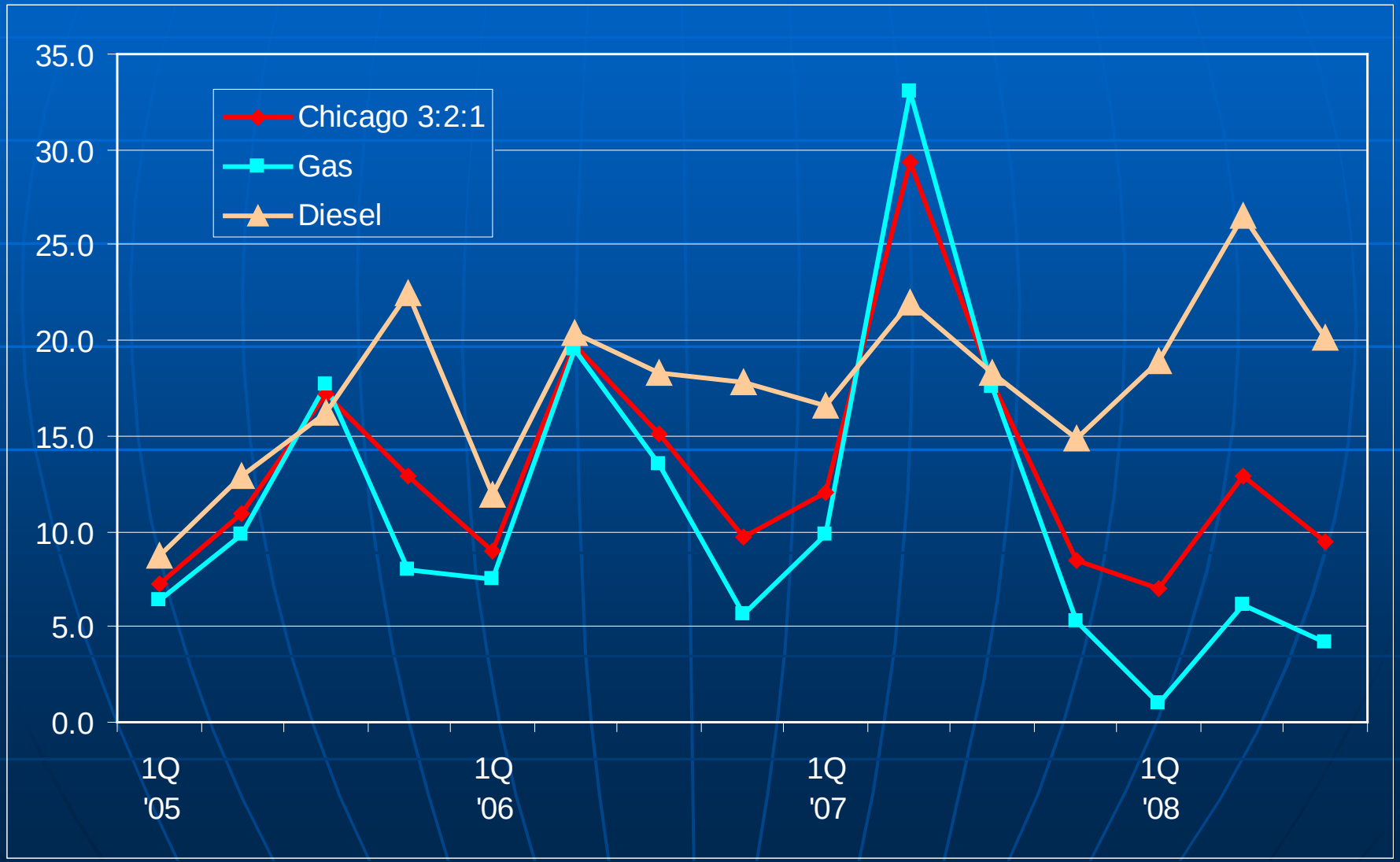
Light / Heavy Differential As A Percentage of WTI



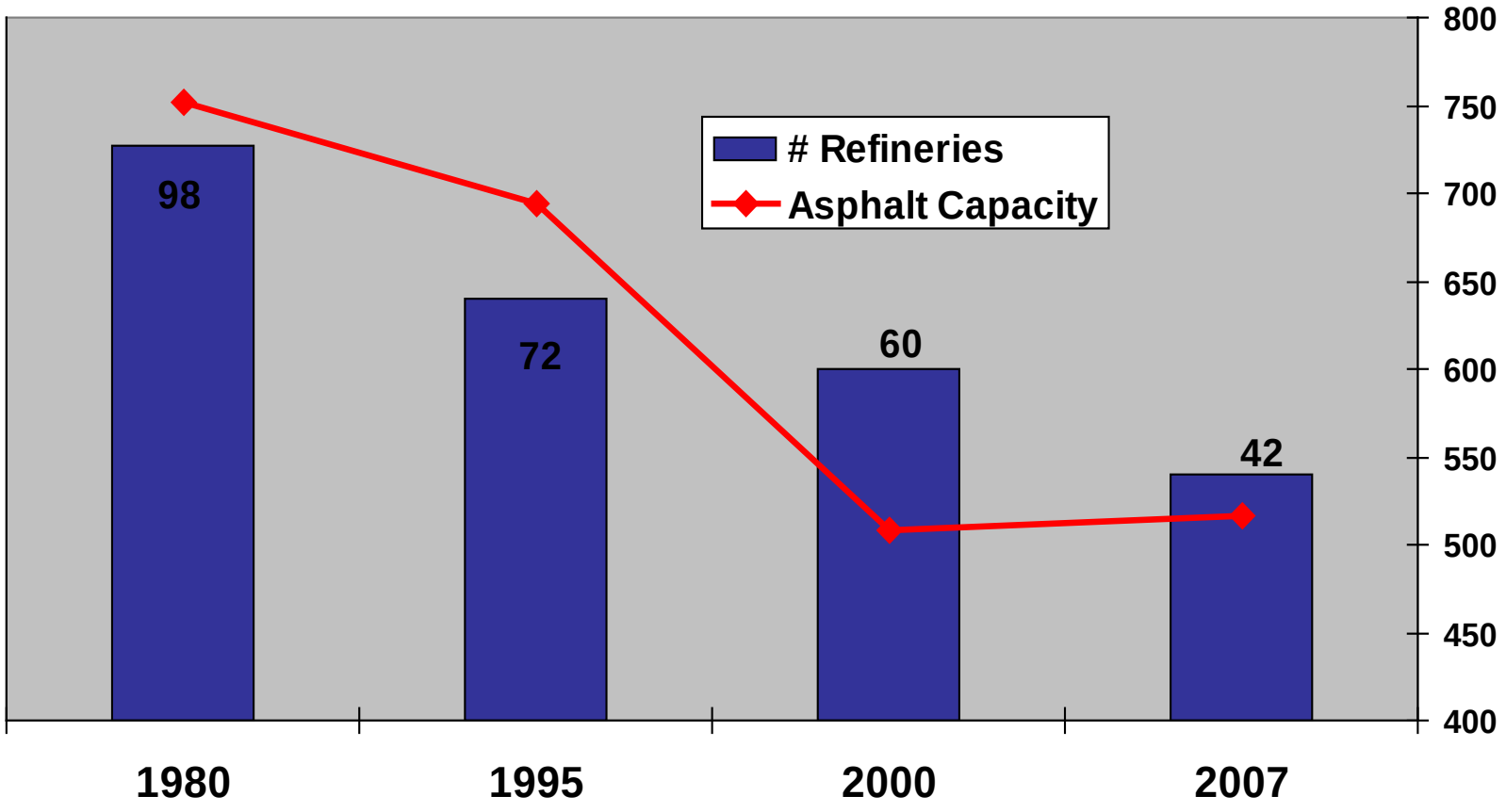
Product Margins
3:2:1 Crack Spread



Product Margins



U. S. Asphalt Refining Capacity



Production Range: 600 B/D to 50,000 B/D

Source: Oil & Gas Journal

Nationwide Refinery Expansions (Coker) Installations

REFINERY COKER ADDITIONS 2005-2011: ENGINEERING, PROCUREMENT & CONSTRUCTION PHASE

Refinery/Owner	Location	Status Stage	Coker '000 b/d*	Online Date
Farmland	Coffeyville, Kansas	Construction	30	2007
Valero	St. Charles, Louisiana	Construction	25	4 Q 2007
Citgo	Corpus Christi , Texas	Planning	5	2009
ConocoPhillips	Borger, Texas	Construction	25	2008
ConocoPhillips	Wood River, Illinois	Construction	55	2008
CHS (Cenex)	Laurel, Montana	Construction	20	2008
Marathon	Garyville & Detroit	Construction + Planning	44+25	2008/2009
United Refining	Warren, Pennsylvania	EPC	10	2008
ConocoPhillips	Ferndale, Washington	EPC	30	2009
Sinclair Tulsa	Tulsa, Oklahoma	Construction	35	2008
Sinclair Wyoming	Sinclair, Wyoming	Construction	25	2008
Frontier	Cheyenne, Wyoming	Construction	3	2007
Hunt	Tuscaloosa, Al	EPC	25	2008
Refinery Coker Subtotals			**300-325mb/d**	

Sources: Pace Global, Argus Media, Polk Associates

Macro Factors that Influence Asphalt Supply and Price

- Crude cost
- Regional and state budgets, 2007 demand declined by as much as 15%
- 15,000,000-19,000,000 tons/yr residuum shifted from asphalt and fuel oil to coker feed over the next three years. (2008-2010)
- Considering historical and current economics, coker feed will be the most economical use for the refinery residuum supply. Fuel oil and asphalt economics will compete for the remaining supply.
- World demand for fuel oil has caused recent prices to be higher than asphalt prices and will most likely continue to cause upward price pressure on asphalt.
- World crude is being produced at maximum rates, expect an average $90/bbl WTI or greater for 2008
- US refining running at maximum capacity-expansion required to meet demand
- Refinery capacity expansion limited to Cokers and to lesser extent minor crude unit expansion to accommodate heavier crude.
- Asphalt will have to compete with alternate residuum uses

Regional Factors that Influence Asphalt Supply and Price

- Demand vs. supply, by region (State Funding)
- Crude prices
- Refinery utilization and operation reliability, Integrated vs. Topping
- Refinery expansion (specific to your region)
- Higher value use of residuum, Cokers vs. Fuel Oil
- Logistics and distribution (rail vs. truck)
- Known supply constraints (storage limitations)
- Rail car issues
- Quality
- Regional quality and specification issues
- Supplier pricing policies are changing to shorter term (30-60) days instead of committing to a specific job (follows crude volatility)

Man-Made Causes Of Asphalt Supply Reductions

- Refinery closures
- Temporary shut-downs (economics)
- Reduced imports
- Coker start-ups
- Refinery Upsets
- Crude run cuts
- Fall turnarounds

Supply Outlook (2009)

- Will vary by region based on crude and product economics.
- Larger light/heavy crude differential will produce more asphalt.
- Increased refining margins will encourage higher crude runs.
- Asphalt will have to carry its weight in crude cost.