

# Industry Research Monitor

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## Industry Headlines

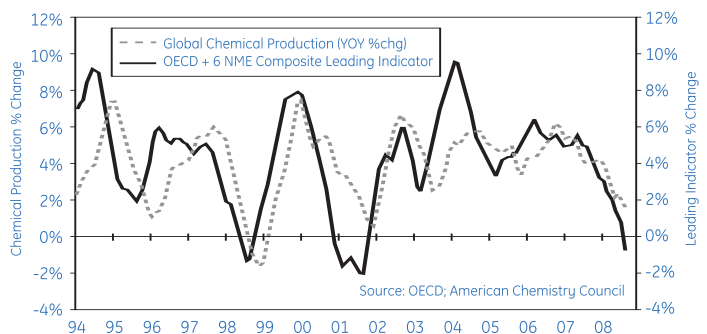
- A global economic slowdown, with budding recessions looming in much of the developed world is beginning to take its toll on global chemicals demand.
- Oil and natural gas prices have plummeted since peaking this summer. However, longer-term supply issues remain and could in fact be exacerbated by a pull back in investment activity. See "In the Focus: Riding the Energy Price Roller Coaster" section, page 5.
- Petrochemical pricing appears to be following oil and natural gas pricing sharply lower, but with a lag which should lead to a "margin holiday" during 3Q 08. This holiday, however, isn't expected to last long given weakening end markets and production recovery following limited fallout from hurricanes Gustav and Ike.
- Marginal projects on the drawing board for 2010 and beyond appear likely to be delayed or cancelled. However, Middle East ethylene capacity is nonetheless set to rise 12 MMT per annum in 2008-09 (a 10% increase globally).
- U.S. chemical exports appear poised to slow reflecting a strengthening of the U.S. dollar and weakening demand abroad.
- Fertilizer pricing has come under pressure reflecting falling corn and grain pricing. However, the longer-term fertilizer outlook remains favorable given low grain inventories and an expected rise in global GDP per capita.
- North American Chemicals & Plastics syndicated loan volume has dropped about 20%YT-Sept. 08 for BB+ and lower or unrated credits. Comparable global volume has dropped about 50% to \$53 billion YT-Sept.



## Current Environment Demand

Global chemicals demand growth has weakened in recent months, with the American Chemical Council's (ACC) Global Chemical Production Index showing growth of only 1.4% in August 2008 vs. 3.0% growth in March 2008 and 4.2% at year end 2007. As shown in the graph below, this follows a similar path of declining growth seen in the OECD's Composite Leading Indicator (CLI). More recently, chemical makers, including BASF and Dow Chemical, reported sharp demand declines in October of 20%+ in some cases.

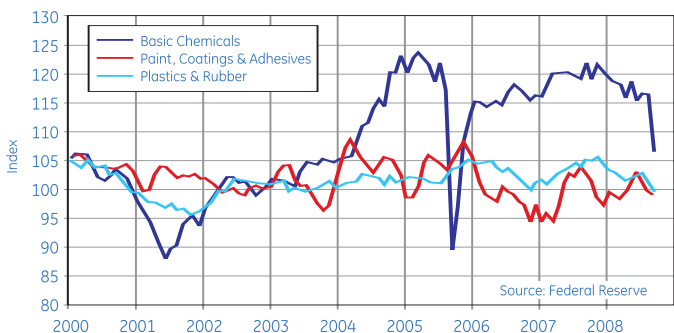
### Global Chemical Production Slowdown Underway



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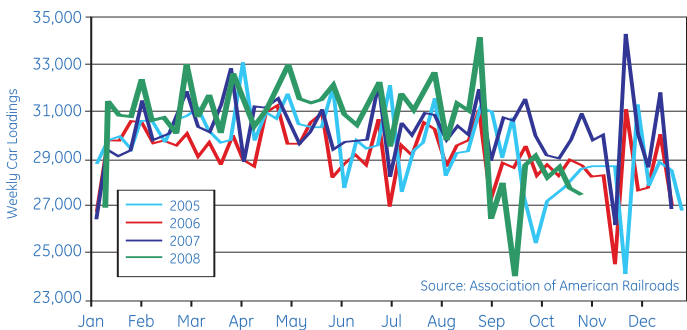
In the U.S., key end markets including residential housing and automotive have been under considerable pressure for some time, with nonresidential construction more recently starting to weaken. This weakness is likely reflected in the U.S. chemicals industrial production index as reported by the Federal Reserve, though the data is distorted by the late summer/fall impact of lost production due to Hurricanes Gustav and Ike. YTD-September Basic Chemicals, Paints Coatings & Adhesives, and Plastic and Rubber indices were down 2.8%, up 0.8% and down 1.1%, respectively. In the month of September vs. a year ago, the production indices for Basic Chemicals, Paints Coatings & Adhesives, and Plastic and Rubber fell, 12.6%, 3.8% and 5.4%, respectively.

### U.S. Chemical Industrial Production Trends



Through November 1st 2008, car loadings of chemicals and allied products loaded onto major U.S. railroads have been essentially flat (up 0.1%) vs. a year ago. More recently, as shown in the green line below, rail car loading have been weak versus the same period in prior years, although this again is likely distorted by late summer Hurricanes which significantly impacted production and shipments.

### U.S. Rail Cars Loaded (Chemicals & Allied Products) - Total Major U.S. Railroads



## Supply

### Hurricanes Blow Over

The chemical industry appears to have suffered only a glancing blow from the late summer hurricanes Gustav and Ike, with little major structural damage, reflecting lessons learned from Katrina and Rita as well as a bit of luck.

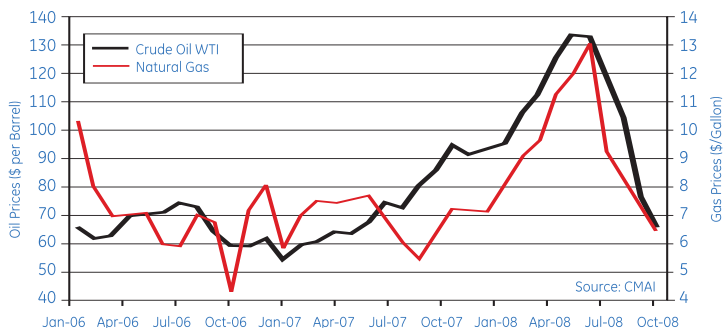
Nevertheless, operating rates across many chemicals were impacted significantly due to widespread disruptions in power and utilities, raw material supplies, and logistics. In the case of Ethylene, operating rates fell to about 50% in the month of September, but began recovering in October, and are expected to rise back to an effective operating rate in the mid to high 80% range by 1Q 2009. However, some capacity may remain idled, with some major global chemical companies having announced significant curtailments in light of recent demand weakness.

## Pricing, Costs and Margin Trends

### “Margin Holiday” Likely to be Short Lived.

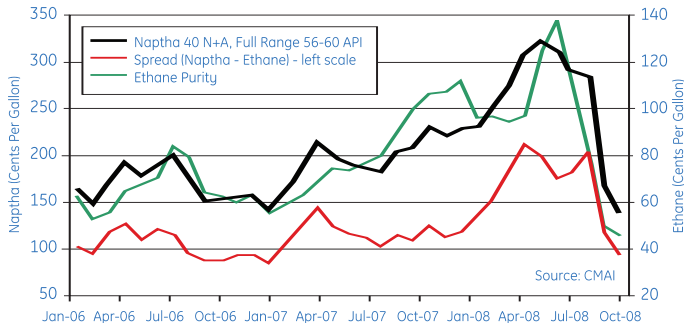
Crude oil and natural gas prices have plummeted since peaking during the summer months, with crude oil recently having fallen below \$60 per barrel. The collapse in energy prices has afforded chemical companies a “margin holiday” during H2 08 as their input costs have fallen faster than their product pricing. However, this “holiday” is likely to dissipate soon, with weak end markets and slowing U.S. export opportunities leading to price declines down the value chain.

### Crude Oil vs. Natural Gas Pricing (U.S.)



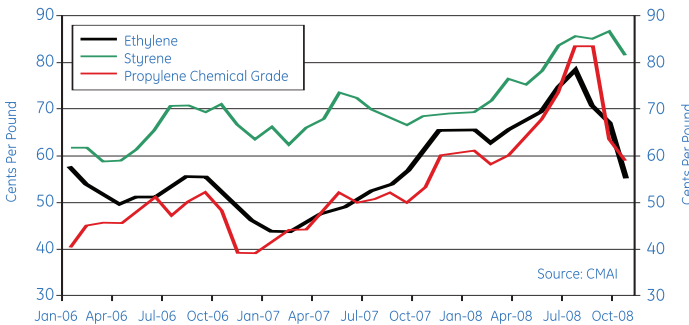
The price ratio of crude oil to natural gas, as shown above, decreased to 10.4 in October vs. 12.4 and 12.7 in September and August, respectively. In general, the narrowing of this ratio tends to reduce the cost advantage of Ethane based production vs. Naptha. A high ratio tends to favor the U.S. competitive position and export opportunities vs. Europe and Asia which have a higher percentage of Naptha based production.

### Ethane vs. Naptha Pricing

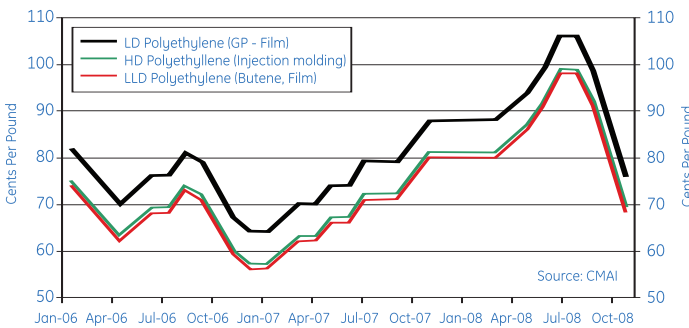


On the monomer side, Ethylene and Propylene contract benchmark prices delivered to the U.S. Gulf coast have dropped sharply as shown in the following graph; however, margins are believed to have expanded nonetheless reflecting an even faster drop in raw material costs.

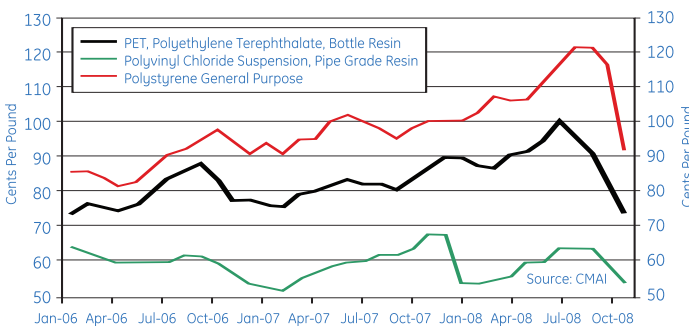
### U.S. Monomer Price Trends



### U.S. Polyethylene Price Trends

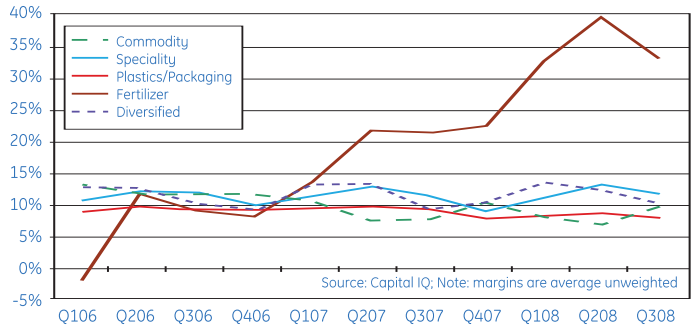


### U.S. Polymer Price Trends



North American chemical company operating margins have held up reasonably well in 3Q 08. Positive fertilizer industry dynamics including high capacity utilization is leading to record profits in 2008.

### Chemical Segment Quarterly Operating Margins



## Other Recent Industry News & Developments

### M&A

- BASF of Germany plans to acquire Ciba Holding AG, Basel, Switzerland, a leading specialty chemical company, for CHF 6.1 billion (approximately €3.8 billion) including net financial and pension liabilities. The merger will extend BASF's leading position as a supplier to the plastics industry and make BASF the second-largest supplier of coating effect materials.
- Dow Chemical has agreed to buy Rohm and Haas for \$18.8 billion in a defining step that will make Dow more of a specialty chemicals producer. Dow will pay \$78 per share, or a 74% premium to Rohm and Haas' closing share price on July 9th. The deal is expected to close by early 2009.
- On November 25th, Ashland, Inc., a diversified chemical company, closed its acquisition of Hercules, Inc., a manufacturer and marketer of specialty chemicals, for approximately \$3.3 billion, including \$700 million of net assumed debt.
- Japan's Mitsubishi Rayon Co. plans to acquire British chemical producer Lucite International Group Ltd. in a friendly takeover worth about \$1.6 billion dollars. The acquisition will enable Mitsubishi Rayon to become a leading manufacturer of PMMA, which is used in car parts and electronics devices such as liquid crystal displays. The firms hope to complete the acquisition in January 2009.
- Arch Chemicals Inc. is set to acquire the water treatment chemicals business of Advantis Technologies Inc. for \$130. The transaction is expected to close early in 4Q 2008.
- Hexion Specialty Chemicals sued Credit Suisse and Deutsche Bank after the banks refused to fund Hexion's proposed \$10.6 billion acquisition of Huntsman at the planned deal closing on October 29. Hexion, which is owned by private equity firm Apollo Management, filed the suit in New York State Supreme Court, alleging that the banks breached obligations to fund the deal, and is seeking to compel the banks to uphold the financing agreement.

## Expansions

- Westlake Chemical will construct a new chlor alkali plant to be located at its vinyls manufacturing complex in Geismar, Louisiana. The new unit is estimated to produce 250,000 tonnes per year electro-chemical units and is currently estimated to cost \$250-300 million. Start-up is targeted for 1H 2011.
- Chemtura, a U.S. speciality chemical company, intends to raise its calcium sulfonate grease capacity at its facility in West Hill, Ontario, Canada, by 60%. The additional capacity is expected to come online by autumn 2009.
- Airgas says it will build a 450 metric tonne per day liquid carbon dioxide (CO<sub>2</sub>) plant to supply an ethanol plant that First United Ethanol is constructing at Camilla, GA. Airgas expects the facility to be operational by late 2009.
- Cargill says it is building a \$22 million, renewable polyols plant at Chicago, scheduled for startup in November. The world-scale facility will produce Cargill's proprietary soybean-based polyols, which can replace petroleum-based chemicals for production of polyurethane products.
- Wacker Chemie in Nunchritz of Germany plans to construct a \$1 billion polysilicon facility with 10 TPY of capacity, full capacity is expected to be reached in 2011. The firm is also adding 3000 TPY capacity to its 10 TPY plant in Burghausen, Bavaria, Germany
- Potash Corp. of Saskatchewan says it will invest about \$1.6 billion to boost its total potash capacity by 2.7 million TPY by the end of 2012.
- Lanxess says it will invest about Euro35 million (U.S.\$46 million) to expand the production capacity of its basic chemicals facilities at Leverkusen, Germany.
- Shin-Etsu Chemical says it will expand the capacity of its specialty cellulose manufacturing facility for pharmaceutical excipients by about 30% at its Naoetsu plant in Joetsu, Japan.
- Hexion Specialty Chemicals, through its subsidiary Hexion Quimica Industria e Comercio Ltda, is building a 450,000 TPY complex for phenol and urea formaldehyde resins in Montenegro, Brazil. Start-up is slated for Q2 09.

## Closures/Curtailments

- BASF says it is temporarily shutting down 80 plants worldwide and reducing production at a further 100 in response to a "massive decline in demand in key industries." The moves account for 20%-25% of the company's overall capacity.



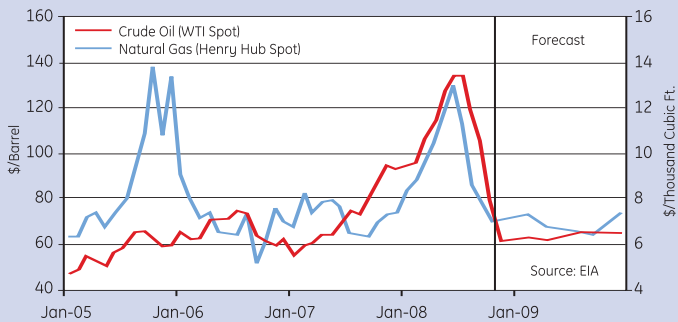
- LyondellBasell says it will temporarily idle its Equistar La Porte, TX cracker until early 2009 due to declining market and economic conditions. The plant has a nameplate capacity of 1.7 billion lbs/year of ethylene and 700 million lbs/year of propylene.
- Mitsui Chemicals Inc., Sumitomo Chemical Co. and Asahi Kasei Corp. plan to cut their ethylene capacity utilization rates by about 5% due to slumping worldwide demand.
- PolyOne says it will close one U.K. and seven North American production facilities over the next several months and transfer production to remaining sites. The closures reflect declining demand in the housing and automotive markets. The sites could reopen if business conditions improve.
- Yara International says it will temporarily stop production of ammonia and urea at its site at Le Havre, France due to poor market conditions. The plant, which has a capacity of 400,000 TPY of ammonia and 350,000 TPY of urea, will be restarted when market conditions improve.
- SABIC announced that it is reducing production of its engineering thermoplastics by up to 20%.
- Rhodia has reduced output of nylon and intermediates at its Chalampe and Valence, France sites by up to 40%-60% due to falling demand from the automobile industry. The company is also considering cuts in nylon production at Belle- Etoile, France. The moves are in addition to the permanent closure of Rhodia's Ceriano, Italy nylon plant.
- Arkema says it will cut production in December at 12 manufacturing sites worldwide citing falling demand from the automotive industry.
- Invista permanently shut down its 150,000 TPY polyethylene terephthalate (PET) resin facility at Greer, SC in Oct 2008.
- Formosa's No 3 naphtha cracker in Mailiao, Taiwan will remain offline indefinitely due to soft demand in the Asian market. The facility was originally closed for scheduled maintenance and was slated to resume operations on Oct. 19, 2008. The plant's capacity is 600,000 TPY of propylene and 1.2 MTPY of ethylene.

# In the Focus: Riding the Energy Price Roller Coaster

## Energy Pricing Takes a Dive as Demand Weakens

The recent dramatic deterioration in the outlook for economic growth in the United States and abroad has led to a significant reduction of energy demand and prices projections of late. On November 12th, the U.S. Energy Information Administration (EIA) forecast that oil demand in the U.S. will drop by 5.4% this year and by another 1.3% in 2009. Globally, the EIA now expects demand growth to slow to its lowest rate in 15 years, with demand expanding to only 85.93 million barrels per day (bpd) in 2009 vs. 85.89 million bpd in 2008. In both years, growth in countries outside of the Organization for Economic Cooperation and Development (OECD), such as China, Brazil, etc... is expected to be offset by sharp declines in oil consumption in OECD countries.

## Crude Oil & Natural Gas Prices Collapse



On the pricing side, the slowdown in demand has led to a dramatic collapse, with the monthly average price of West Texas Intermediate (WTI) crude oil having dropped from over \$133 per barrel in July to near \$50 per barrel as of late November. As of November 12th, the EIA forecasts that the annual average WTI price will be just \$63.50 in 2009 vs. \$101.45 per barrel in 2008. Natural gas pricing has also collapsed, with the EIA forecasting the Henry Hub natural gas spot price to average \$6.82 per million cubic feet (Mcf) in 2009 vs. \$9.27 per Mcf in 2008. This drop in pricing is all the more stark since it followed calls by some forecasters for \$200 per barrel oil when oil hit \$140 per barrel this summer.



## OPEC Responds

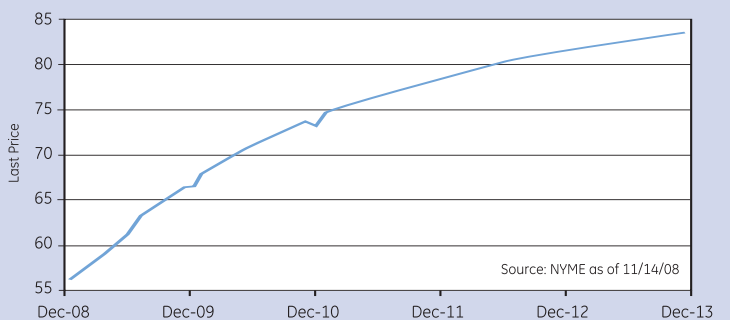
In response to the weakening oil demand/pricing and in anticipation of rising non-OPEC supplies, OPEC decided at its October meeting to cut its crude oil production targets by 1.5 million barrels per day (bbl/d). The extent of actual OPEC compliance to its new production target is uncertain. The EIA in its forecast assumes sharp drop in oil prices will likely lead to compliance that is above historical levels. EIA projects that OPEC crude oil production will fall from 32.3 million bbl/d in October 2008 to 31.3 million bbl/d in the first quarter of 2009, where it will remain relatively stable through the end of 2009. This represents a decline of 1 million bbl/d from October 2008 production levels, or about 70 percent of the announced cut. Nevertheless, on the basis of days of forward cover, OECD commercial inventories are well above historic levels, and EIA projects that they will remain there through the end of 2009.

## Peak Oil is Dead? Long Live Peak Oil

According to the IEA, production at the world's oil fields will decline faster in coming years, putting more pressure on future oil supplies. As current fields fade with age and the industry moves offshore and into smaller fields, decline rates will accelerate, the agency found, and more investment will be required to make up the shortfall. International Energy Agency has warned that slower investment in new oil projects by OPEC member countries in the aftermath of the global economic slowdown may cause an energy-supply crunch in the next two decades.

Given the high cost of bringing on new output and the struggle to match supplies with demand, the IEA has assumed consumers will pay an average of \$100 a barrel for oil over the next seven years and more beyond that. According to Nobuo Tanaka, executive director of the IEA, "Current trends in energy supply and consumption are patently unsustainable – environmentally, economically and socially – they can and must be altered." IEA has warned that the prices could jump to more than US\$200 a barrel by 2030 as demand soars in China, India and other emerging economies.

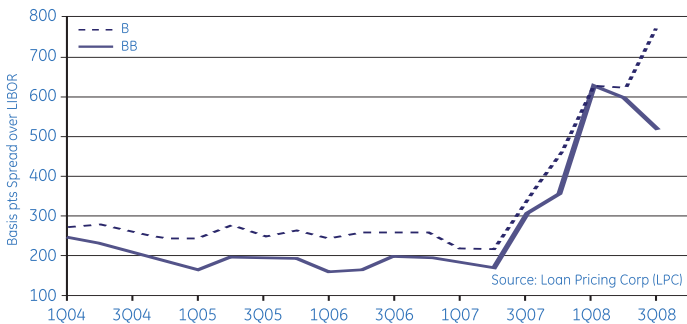
## Crude Oil Forward Price Curve



# Debt/M&A Market Trends

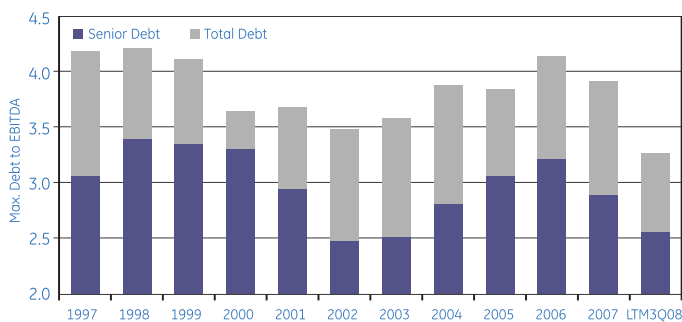
Although the overhang of hung deals has been largely cleared through secondary sell-downs, the leveraged loan market has nevertheless remained weak, with little activity accept for well structured, higher rated credits. BB rated credits average yield to 3 year maturity spreads narrowed moderately to 516 basis points in the primary market in 3Q08 vs. 591 at the end of 2Q08. There were very few primary single B credits issued, with secondary yields for B rated credits averaging just under 784 basis points in 3Q08 vs. 617 in 2Q08.

## Drawn Margins on Leveraged Institutional Term Loans



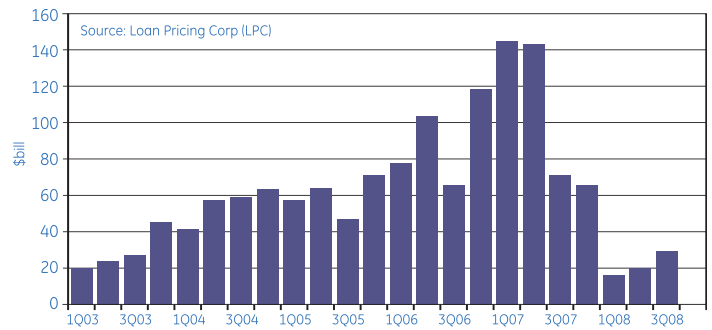
The middle market has not been immune to the tightening of covenant standards, with regional banks and specialty finance companies having become increasingly conservative with respect to structures. Total debt to EBITDA levels for middle market borrowers have tightened considerably over the last twelve months, with the average maximum debt to EBITDA level of 3.3 times, down significantly from 2007's average of 3.9 times.

## Average Middle Market Maximum Debt to EBITDA Covenants



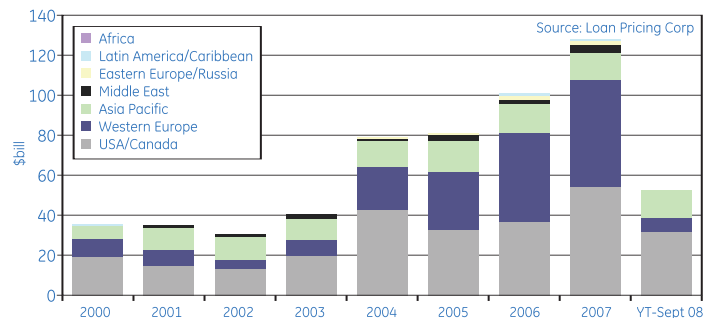
Institutional term loan issuance fell 58% in 3Q08 and 82% year-to-September 2008 vs. corresponding year ago periods reflecting the continued credit market "freeze." Institutional appetite for cash flow loans has receded, with Asset Based Loan (ABL) share of the overall leveraged loan market having jumped to 14% through 3Q2008, up from 5% in 2007.

## U.S. Quarterly Institutional Term Loan Issuance



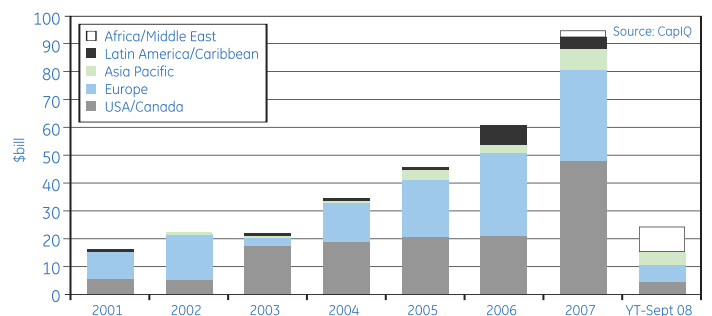
In the chemicals sector, total global syndicated loan volume for BB+ and lower or unrated credits dropped 50% in year to September 2008 vs. the same period a year ago, with North American volume down 20% according to Loan Pricing Corp. 2007 was a record year for loan issuance driven by both corporates and financial sponsors.

## Global Chemical Syndicated Loan Volume



The freezing of the credit market has also led to a sharp slowdown in Global chemical M&A activity as shown in the graph below.

## Global Chemical M&A Deal Volume by Region



M&A activity is down sharply in 2008 from an unusually high peak in 2007, and is now tracking levels similar to the 2002-03 timeframe.

# \$5 Billion in Investments Across the Value Chain\*

\*GE Corporate Financial Services; 8/08

## \$1.6 bil

### Commodity

(e.g. Agri, Resins, Fibers)



## \$1.6 bil

### Specialty

(e.g. Coatings/Adh, INd. Gases)



## \$1.8 bil

### Rubber & Plastic

(e.g. Agri, Resins, Fibers)



### \$140,000,000

Co-Lead Arranger  
DIP Facility



Plastic Bags/Film

## Spotlight Transaction

In May 2008, GE Commercial Finance Corporate Lending provided the Hilex-Poly, a manufacturer of plastic bag and film products, with a \$140 million debtor-in-possession (DIP) credit facility to support the company's pre-packaged Chapter 11 filing.

On July 9th 2008, GE provided a \$125 million plan of reorganization credit facility to the company. The financing was used to refinance the company's DIP financing upon the company's emergence from a pre-packaged Chapter 11 bankruptcy. GE Capital Markets arranged both transactions.

Based in Hartsville, SC, Hilex currently operates 10 manufacturing facilities across the U.S. Their products range from bagging systems to agricultural films.

### \$125,000,000

Co-Lead Arranger  
POR Facility



Plastic Bags/Film

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