

Financial Review of the Global Oil and Natural Gas Industry: 2016



Markets and Financial Analysis Team

May 2017

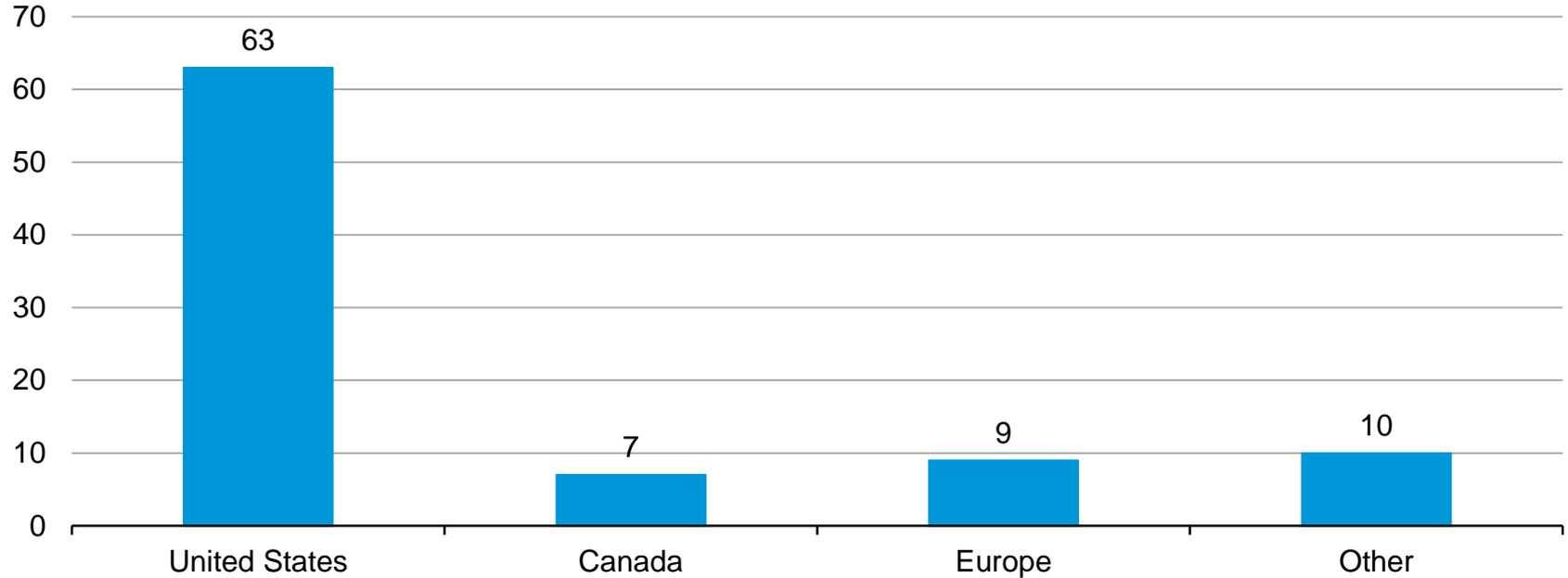
Key findings for 2016

- Brent crude oil daily average prices were \$45.13 per barrel in 2016—16% below 2015 levels
- Global liquids and natural gas production declined by 1.5% and 1.1%, respectively, in 2016
- Companies reduced upstream investment to the lowest annual level during the 2007–16 period
- Continued reductions in exploration spending likely contributed to the lowest annual additions to liquids reserves during the 2007–16 period
- Production cost reductions lowered lifting costs per barrel to the lowest during the 2007–16 period
- European refiners had the highest earnings per barrel of oil processed

Upstream

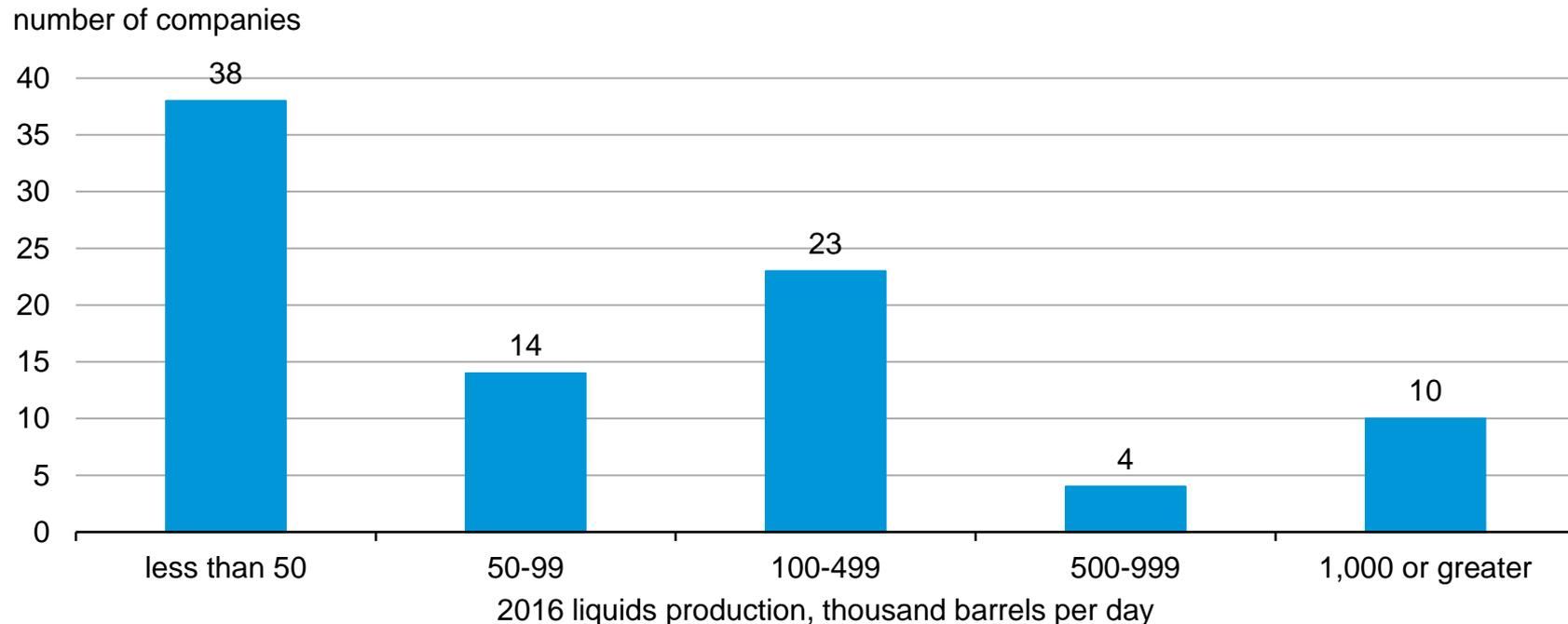
Geographic distribution of global oil and natural gas companies, 2016

number of companies



Source: U.S. Energy Information Administration, *Evaluate Energy*

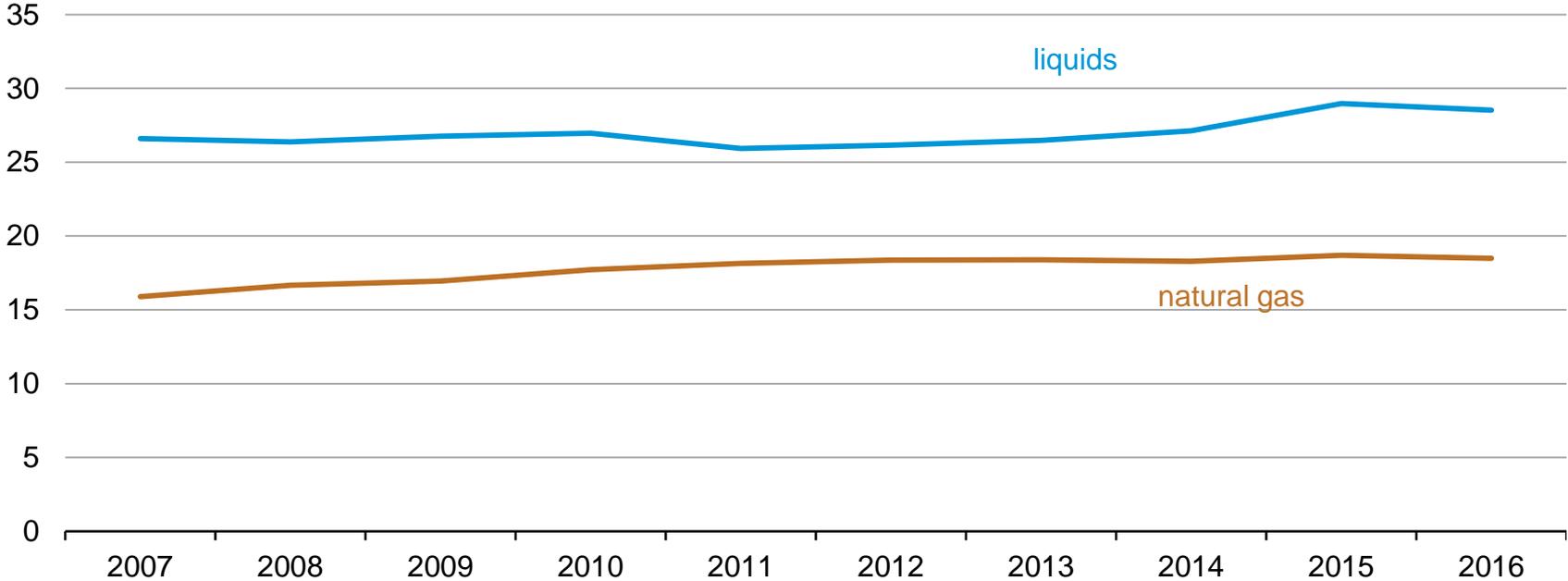
Distribution of companies by volume of petroleum liquids produced, 2016



Source: U.S. Energy Information Administration, *Evaluate Energy*

Production from oil and natural gas companies

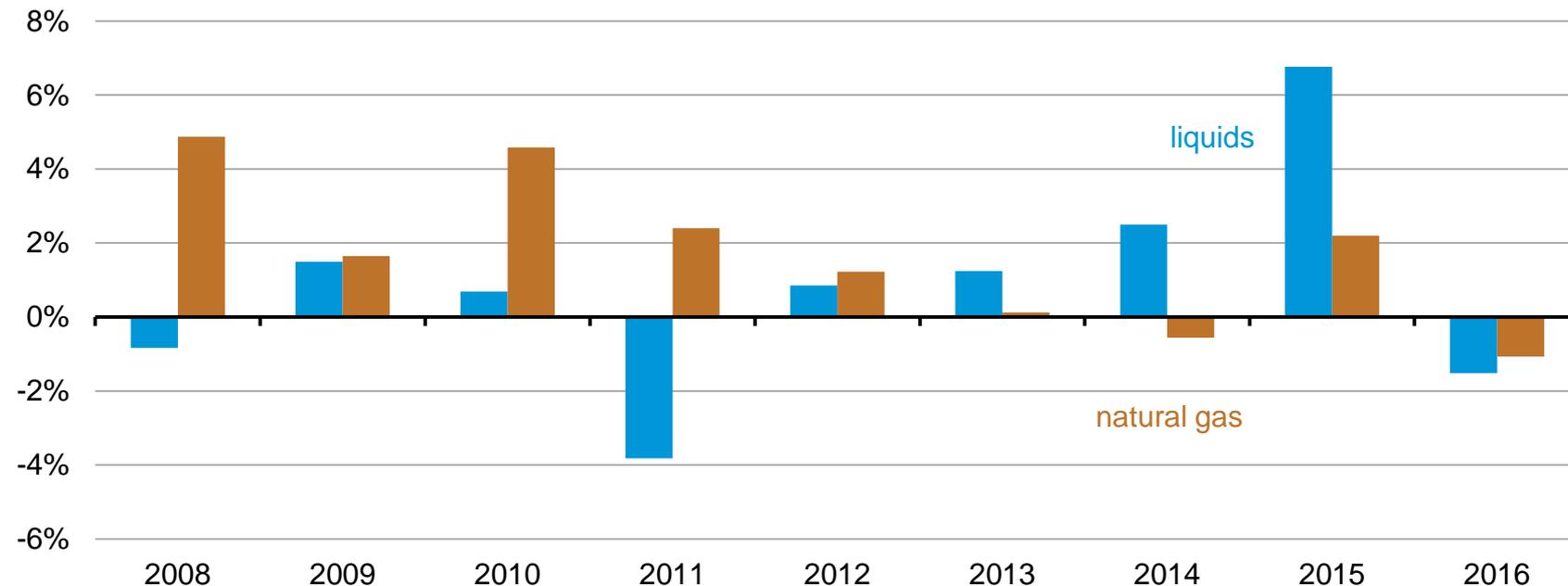
oil and natural gas production
million barrels of oil equivalent per day



Source: U.S. Energy Information Administration, Evaluate Energy

Liquids and natural gas production declined from 2015 to 2016, the first annual decline for both in the 2007–16 period

oil and natural gas production
year-over-year change

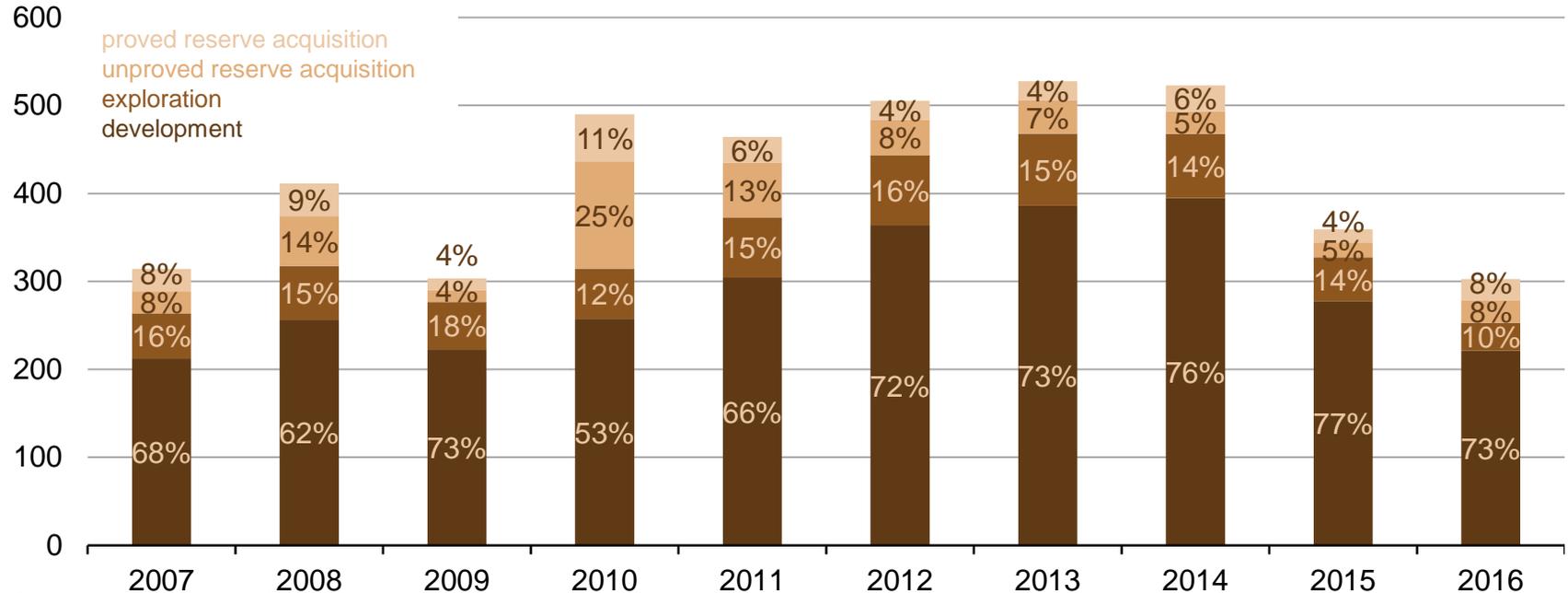


Source: U.S. Energy Information Administration, Evaluate Energy

Expenditure reductions brought upstream spending to 10-year lows

upstream costs incurred

billion 2016\$

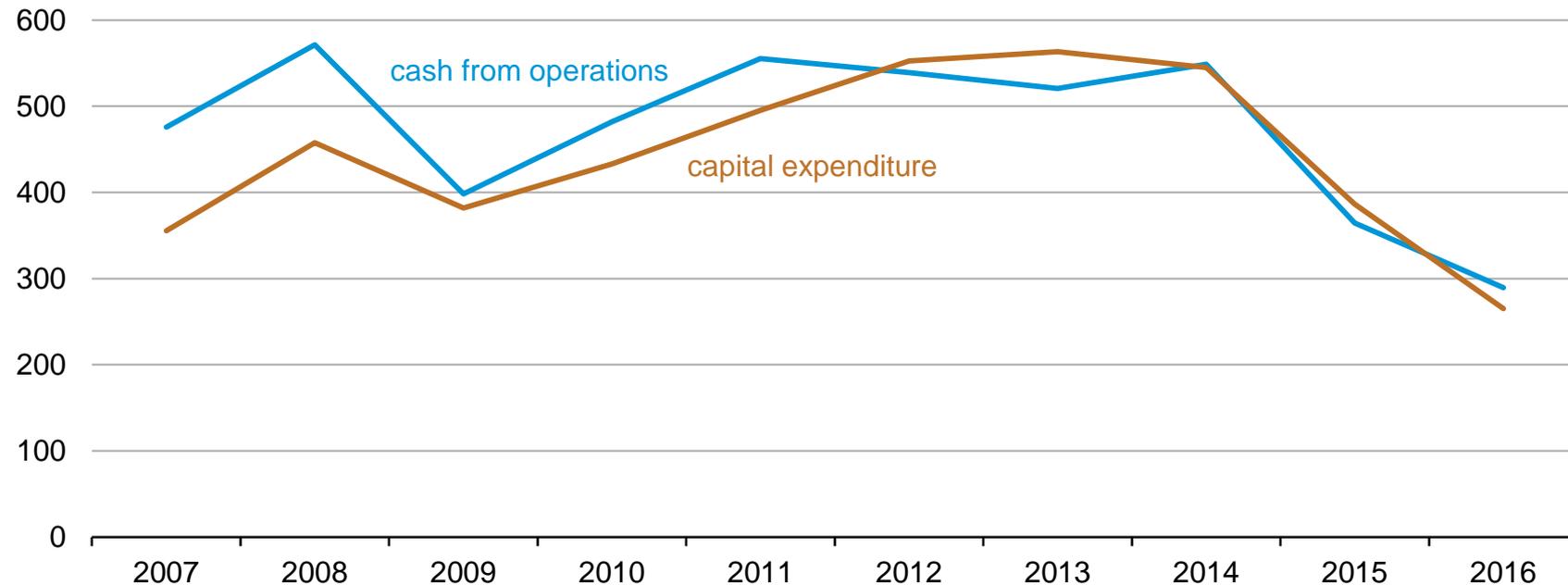


Source: U.S. Energy Information Administration, Evaluate Energy

Note: Percentages represent shares of total upstream costs. Percentages do not sum to 100% because of rounding.

Capital expenditure and cash flow fell \$121 billion and \$75 billion, respectively, in 2016

cash flow items
billion 2016\$

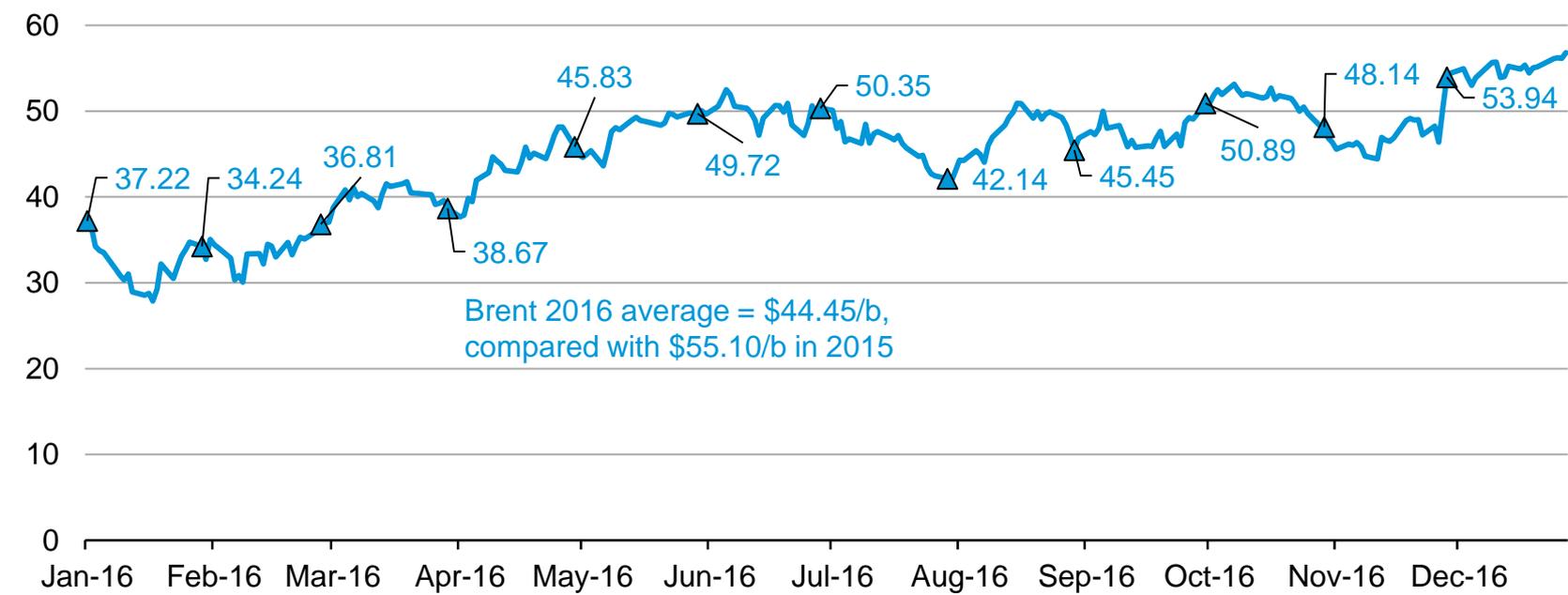


Source: U.S. Energy Information Administration, Evaluate Energy

The SEC requires companies to value proved reserves based on an average of the prices on the first day of each month

Brent crude oil front-month futures price

\$/b



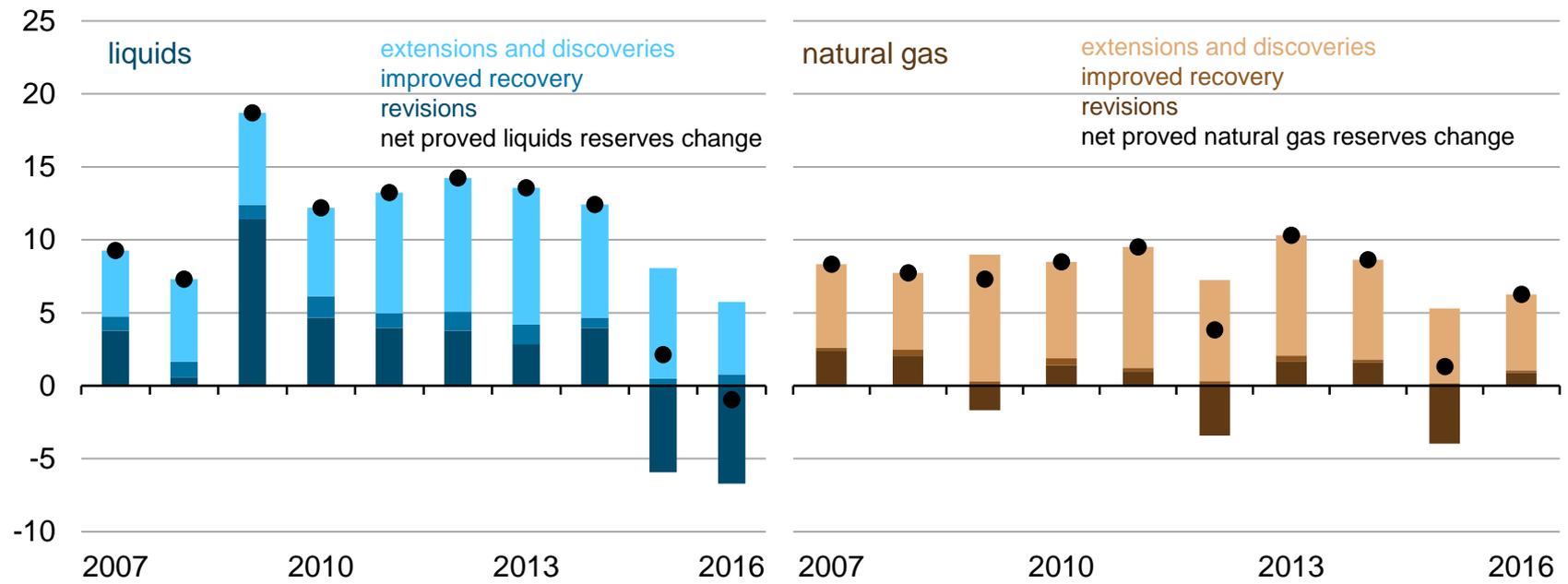
Source: U.S. Energy Information Administration, Evaluate Energy, Bloomberg L.P.

Note: SEC = Securities and Exchange Commission; b = barrel

Negative revisions to proved liquids reserves offset liquids discoveries but contributed to increases in natural gas proved reserves

reserve additions

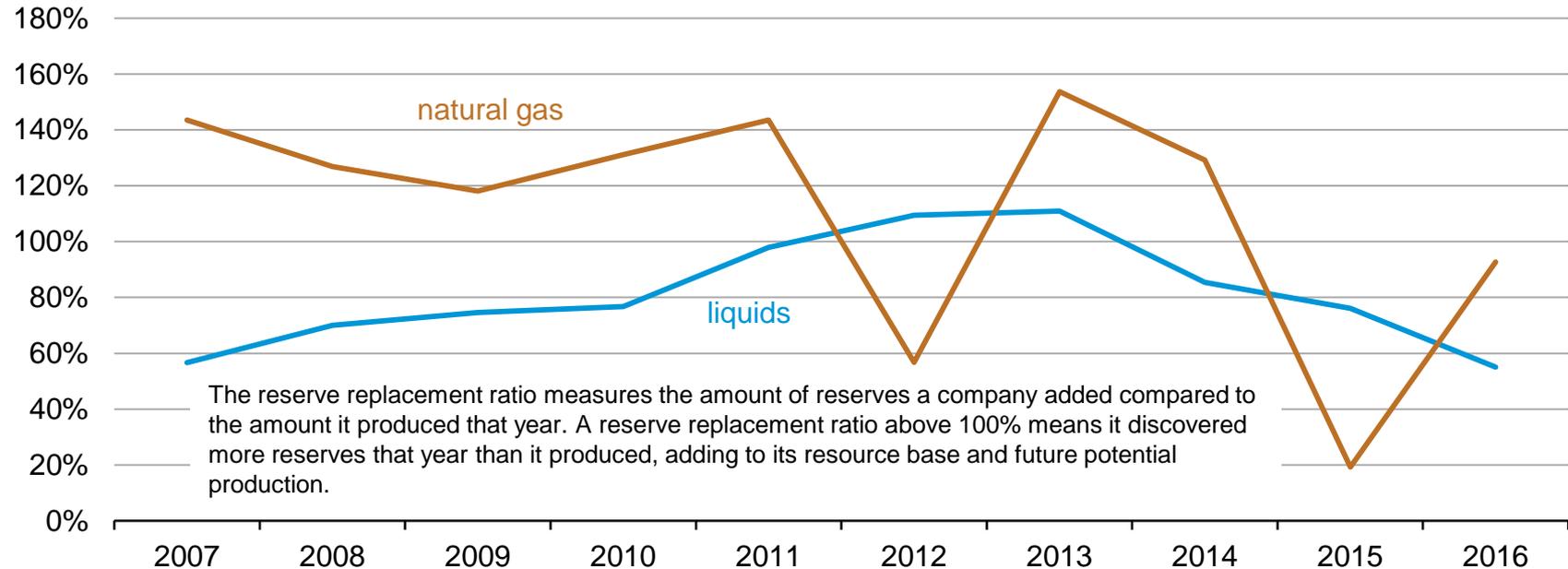
billion barrels of oil equivalent



Source: U.S. Energy Information Administration, Evaluate Energy

Additions to liquids and natural gas reserves were lower than production

reserve replacement ratio



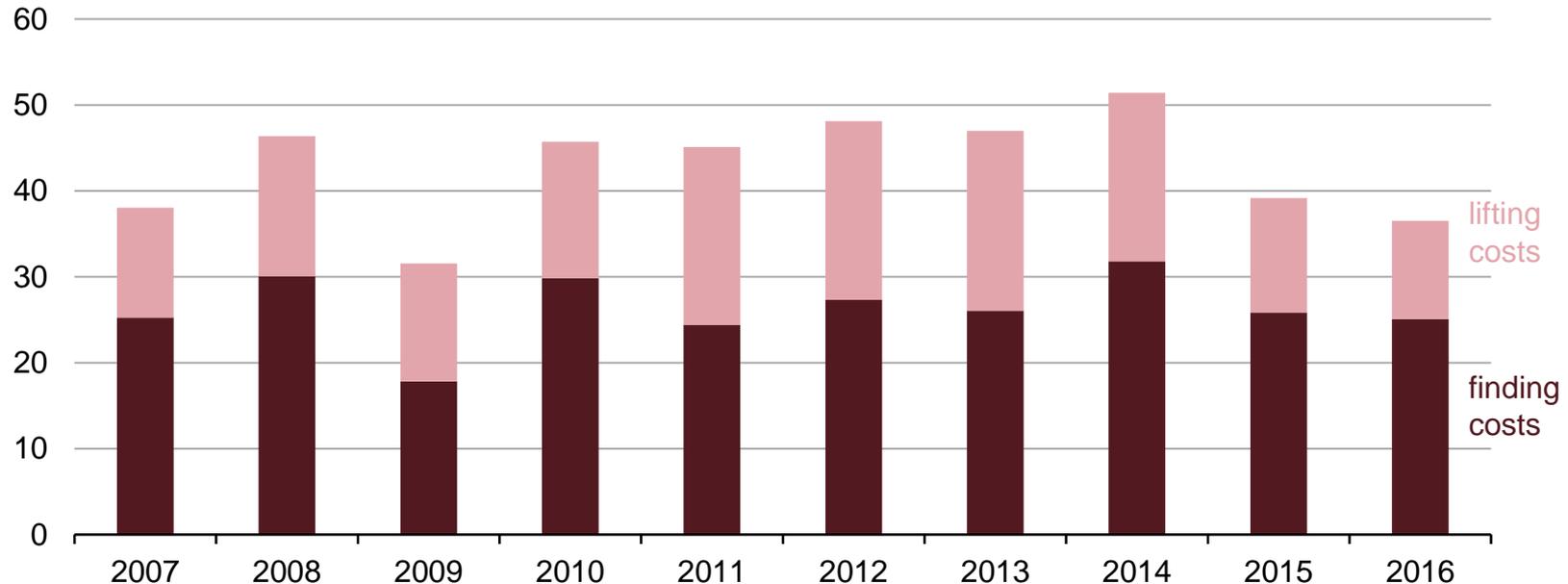
The reserve replacement ratio measures the amount of reserves a company added compared to the amount it produced that year. A reserve replacement ratio above 100% means it discovered more reserves that year than it produced, adding to its resource base and future potential production.

Source: U.S. Energy Information Administration, Evaluate Energy

Note: Excludes reserve revisions

Excluding downward revisions of past reserves, finding and lifting costs fell by almost \$3 per barrel of oil equivalent

2016 \$/barrel of oil equivalent (boe)

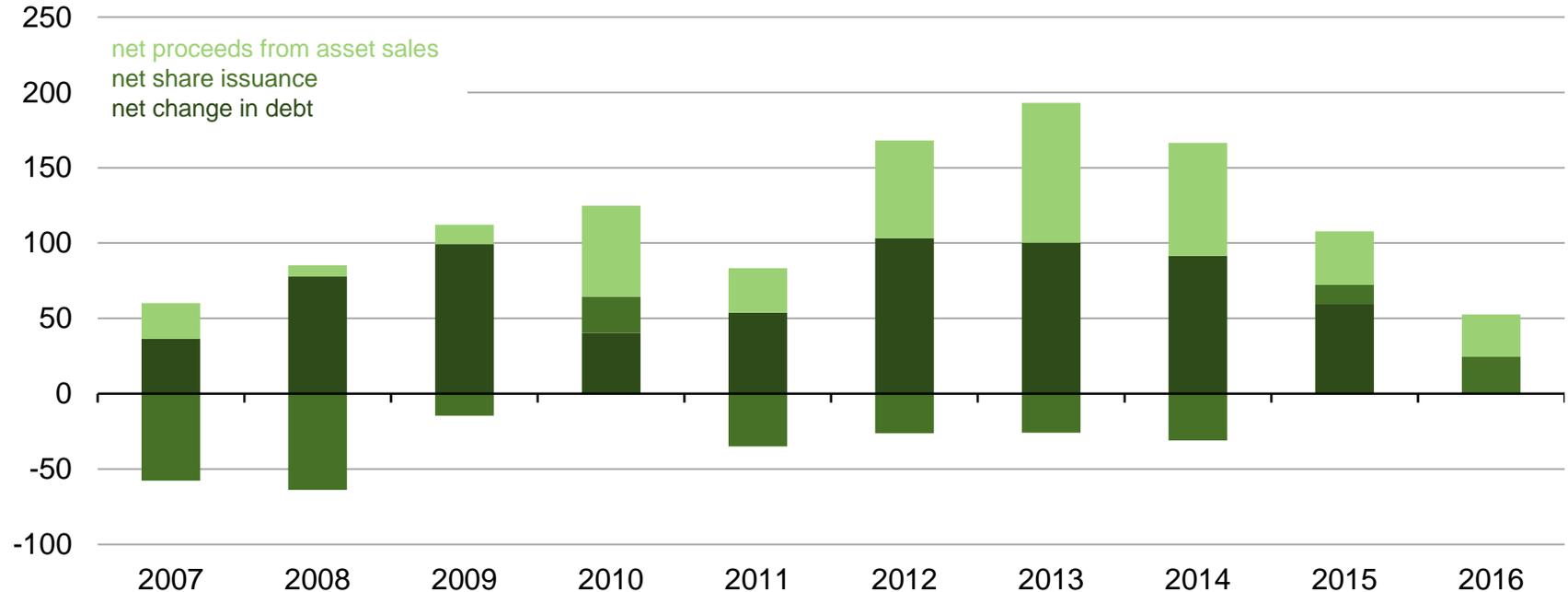


Source: U.S. Energy Information Administration, Evaluate Energy

Note: Excludes reserve revisions

Companies raised \$53 billion by selling assets and issuing equity shares

cash flow items
billion 2016\$

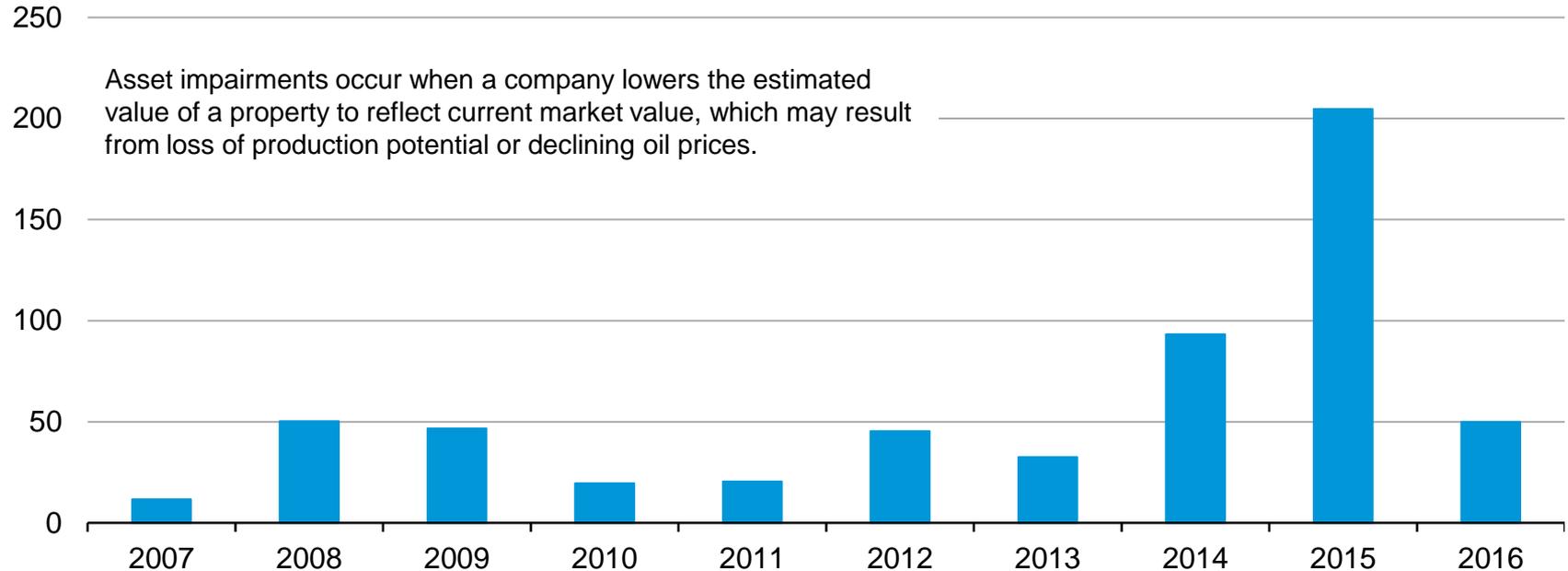


Source: U.S. Energy Information Administration, Evaluate Energy

The write-down in the value of proved reserves fell to \$50 billion in 2016

asset write-downs (impairment charges)

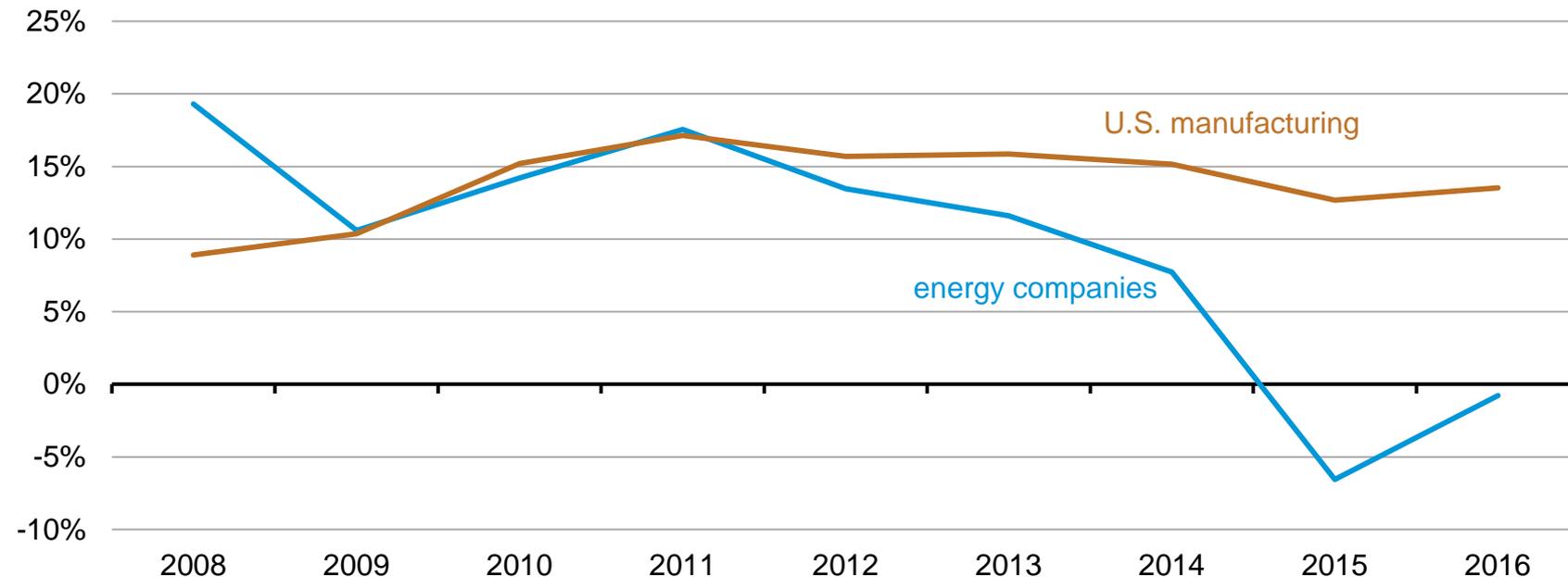
billion 2016\$



Source: U.S. Energy Information Administration, Evaluate Energy

Losses in 2016 were 1% of shareholders' equity for the energy companies; returns for U.S. manufacturing increased to 14%

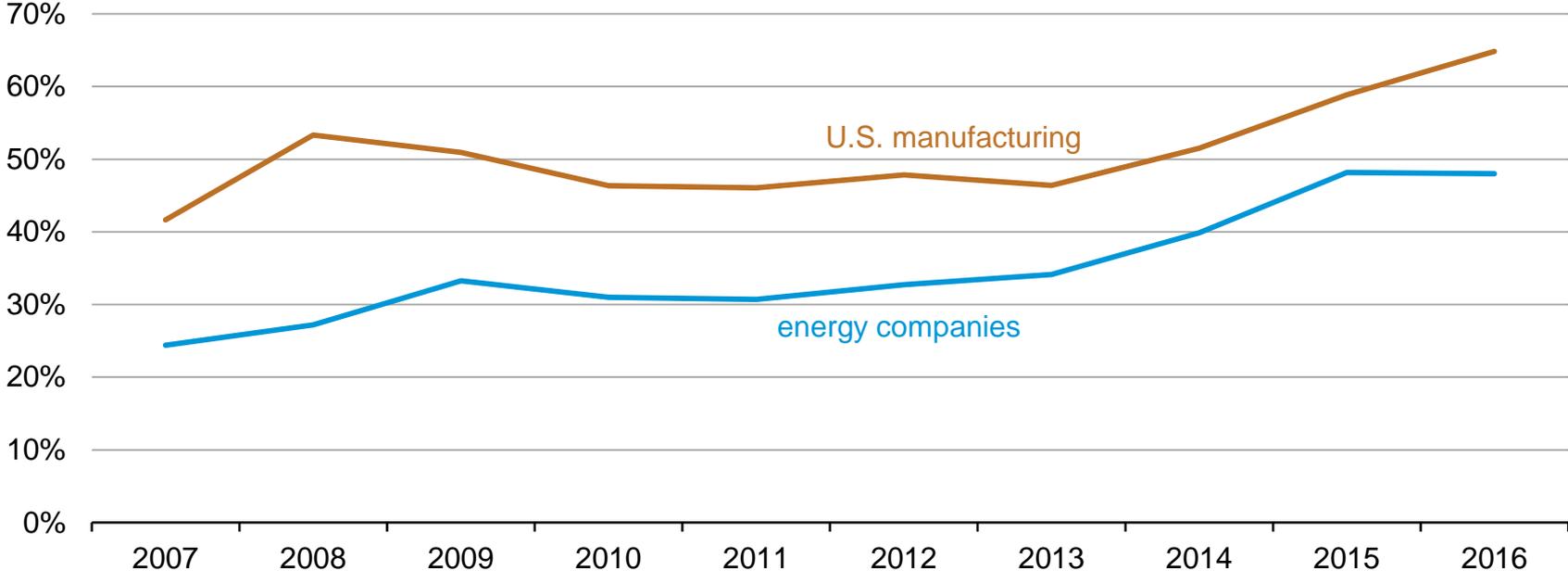
return on equity



Source: U.S. Energy Information Administration, Evaluate Energy, U.S. Census Bureau

The long-term debt-to-equity ratio increased for U.S. manufacturing companies but fell slightly for energy companies

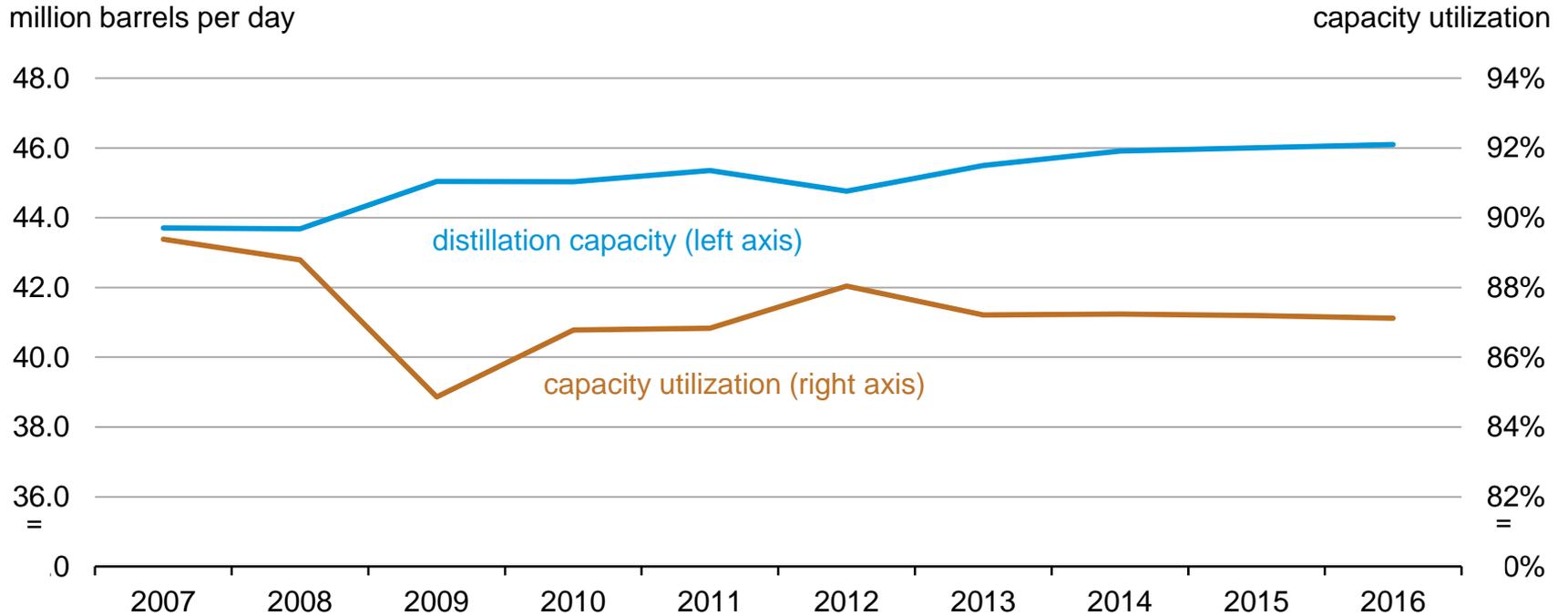
long-term debt-to-equity ratio



Source: U.S. Energy Information Administration, Evaluate Energy, U.S. Census Bureau

Downstream

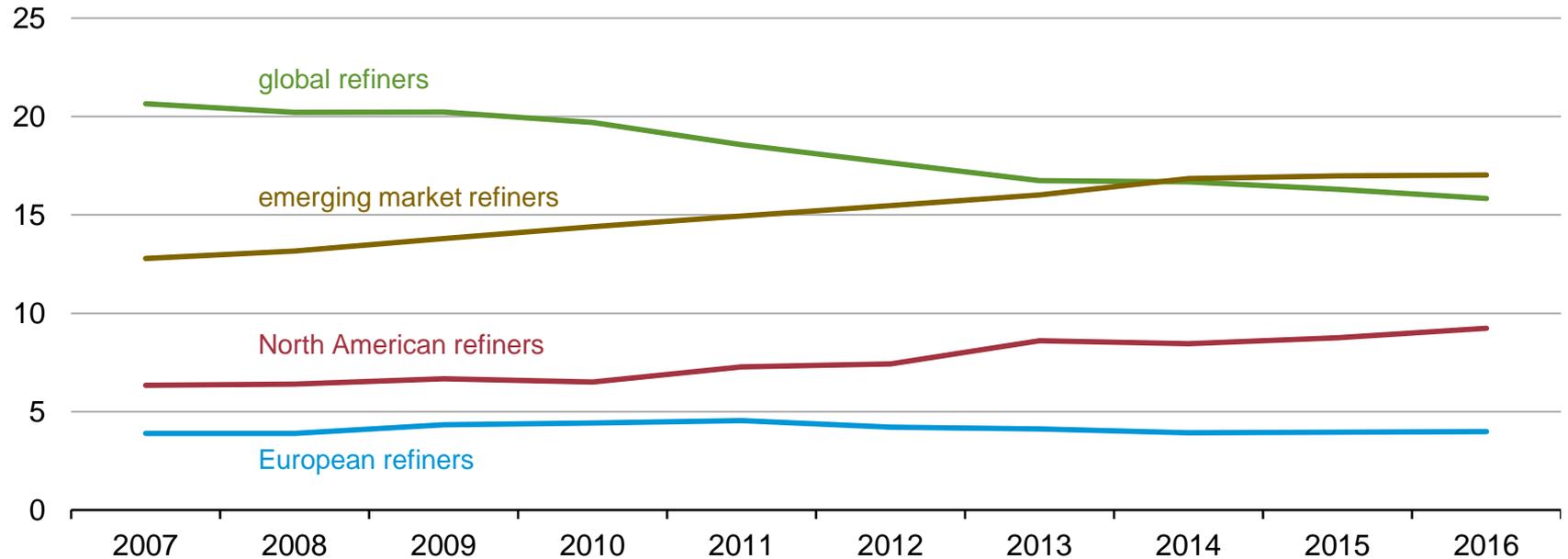
Refining distillation capacity increased slightly in 2016



Source: U.S. Energy Information Administration, Evaluate Energy

Several North American refiners added distillation capacity in 2016

distillation capacity by region
million barrels per day

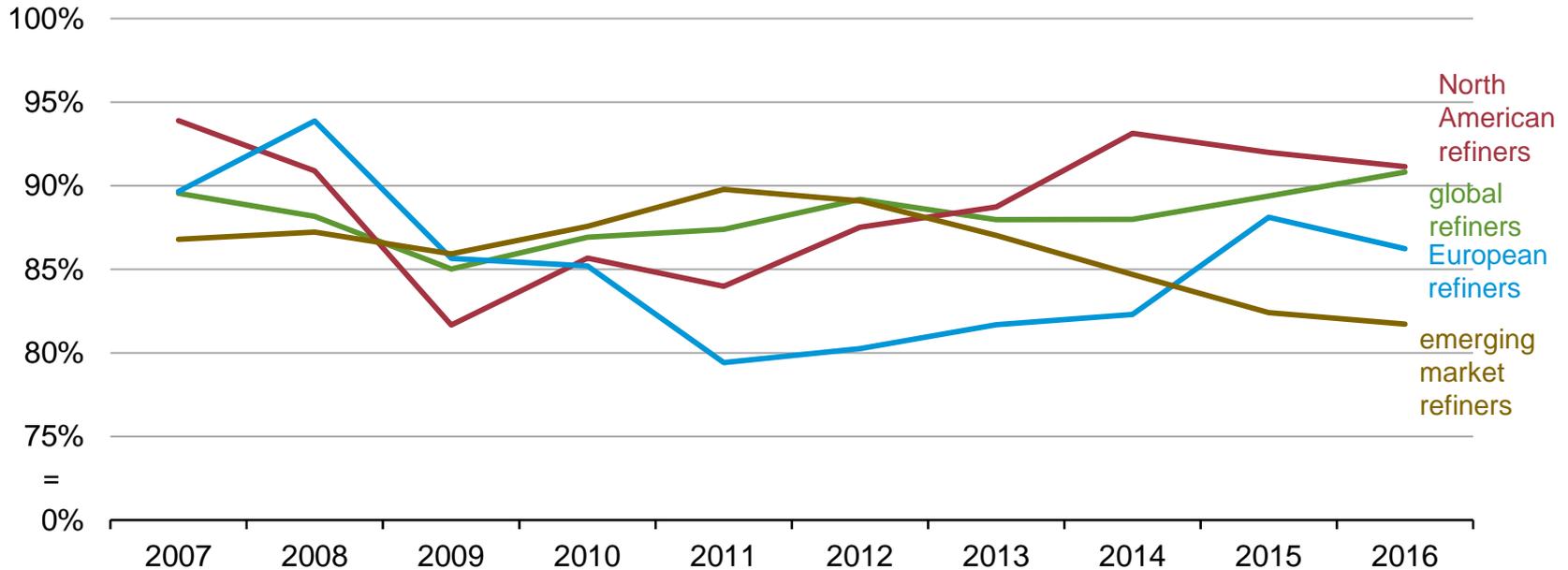


Source: U.S. Energy Information Administration, *Evaluate Energy*

Note: A global refiner is a company with refining assets in different regions.

North American refiners had the highest capacity utilization for the fourth consecutive year in 2016

capacity utilization

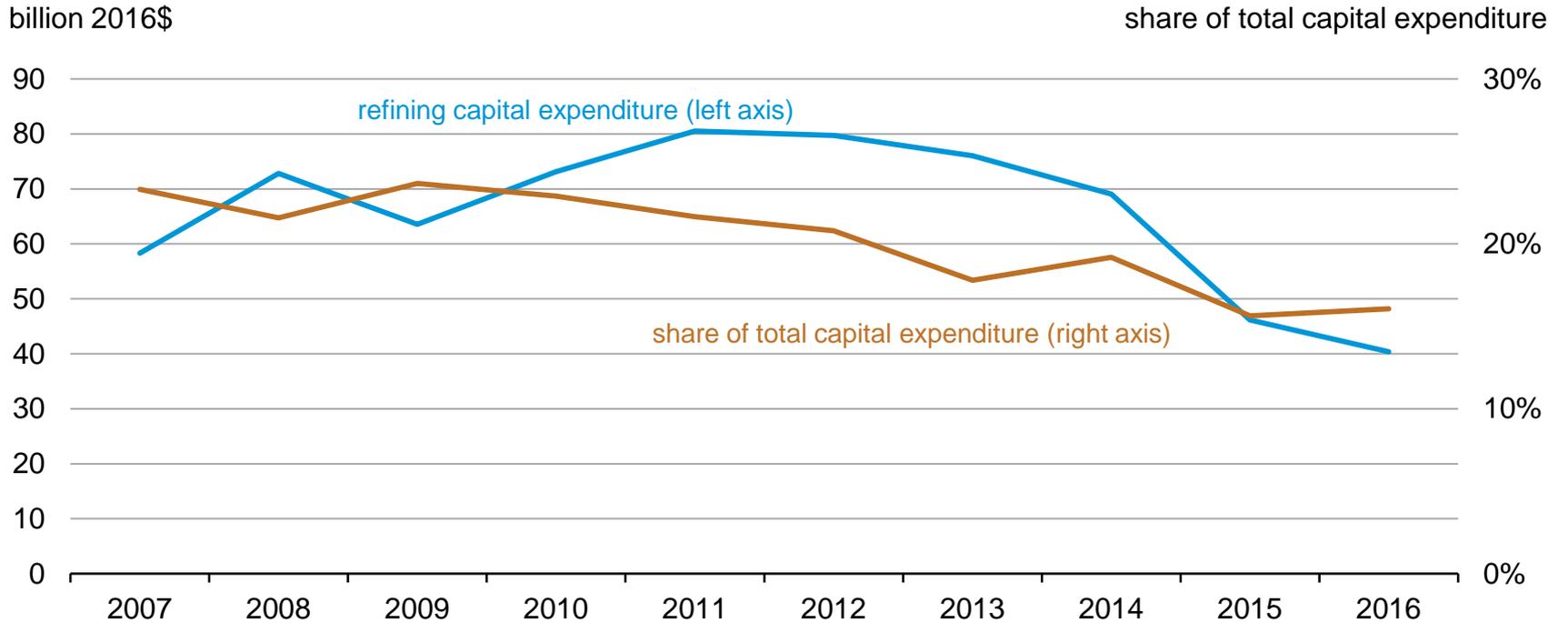


Source: U.S. Energy Information Administration, Evaluate Energy

Note: A global refiner is a company with refining assets in different regions.

Refining capital expenditure in 2016 fell to the lowest in 10 years

refining capital expenditure
billion 2016\$

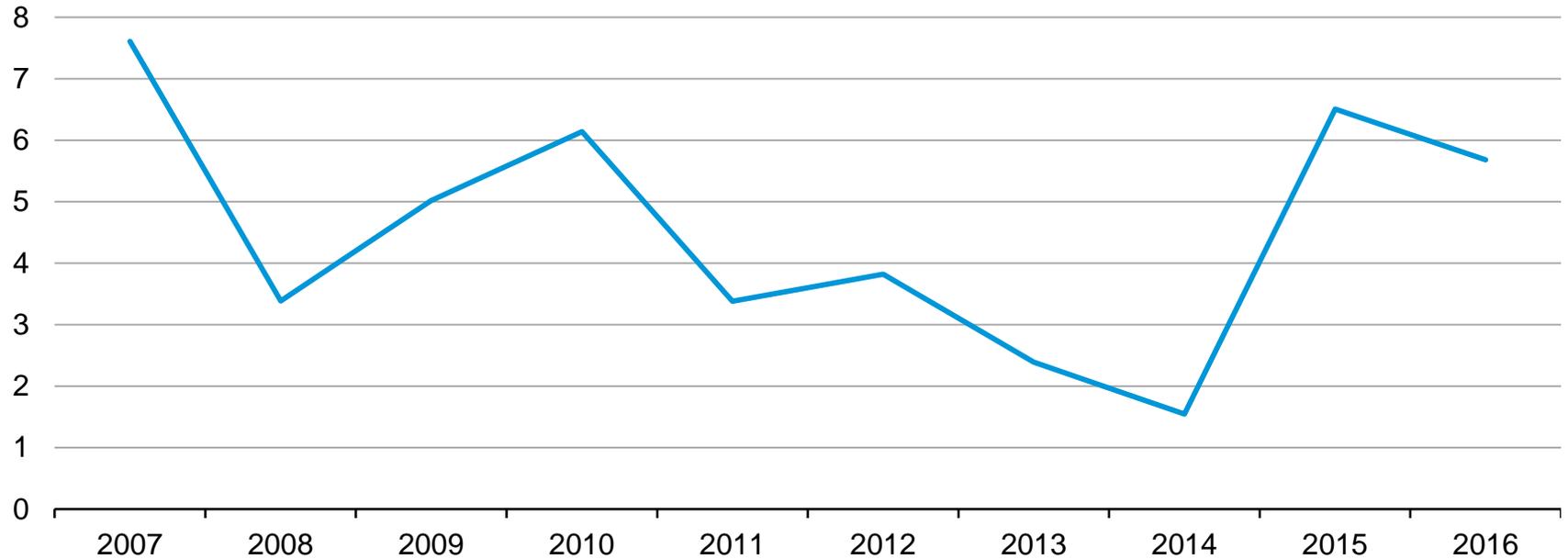


Source: U.S. Energy Information Administration, Evaluate Energy

Earnings per barrel processed declined 83 cents per barrel in 2016

earnings per barrel processed

2016 \$/b

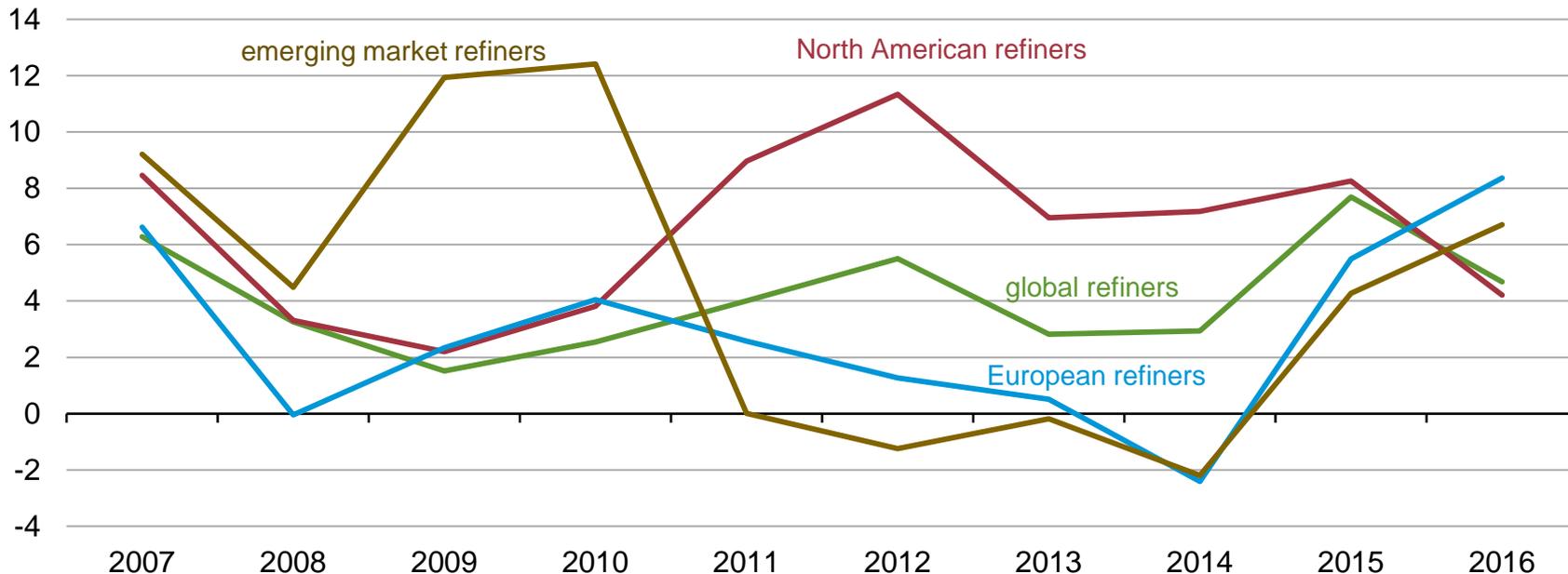


Source: U.S. Energy Information Administration, Evaluate Energy

European refiners had the largest earnings per barrel processed among the refinery group

earnings per barrel processed

2016 \$/b



Source: U.S. Energy Information Administration, Evaluate Energy

Note: A global refiner is a company with refining assets in different regions.

Appendix: List of companies in the upstream analysis

Abraxas Petroleum Corporation	ConocoPhillips	Halcon Resources Corporation	Noble Energy	Rosetta Resources Inc.	Whiting Petroleum Corporation
Anadarko Petroleum Corp.	Contango Oil and Gas Company	Harvest Natural Resources Inc.	Northern Oil & Gas, Inc	Royal Dutch Shell	WPX Energy
Antero Resources Corporation	Continental Resources	Hess Corp	Novatek	Sabine Oil & Gas Corporation	XTO
Apache Corporation	Denbury Resources Inc.	Houston American Energy Corp	Oasis Petroleum Inc.	Sanchez Energy Corp	YPF Sociedad Anonima
Apco Oil and Gas International Inc	Aker BP ASA	Husky Energy Inc.	Occidental Petroleum Corporation	SandRidge Energy	Yuma Energy, Inc.
Approach Resources Inc	Devon Energy Corporation	Imperial Oil Limited	OMV	Sasol Limited	
Athlon Energy Inc.	Earthstone Energy Inc.	Isramco, Inc	Pacific Exploration and Production Corp	Sinopec	
ATP Oil & Gas Corp.	Encana Corporation	Kodiak Oil & Gas Corp.	Parsley Energy Inc.	SM Energy Company	
Berry Petroleum Co.	Energen Corp	Kosmos Energy	PDC Energy, Inc.	Sonde Resources Corp.	
BG Group	Energy XXI	Laredo Petroleum	PEDEVCO Corp.	Statoil ASA	
Bill Barrett Corporation	Enerplus Corporation	Lilis Energy Inc.	Penn Virginia Corporation	Stone Energy Corporation	
BP Plc.	ENI	Linn Energy	Petro-Canada	Suncor Energy Inc.	
Carrizo Oil & Gas, Inc	EOG Resources	Lukoil (IFRS)	Petrobras (IFRS US\$ Current)	Swift Energy Co	
Cenovus Energy Inc.	EPL Oil & Gas Inc	Blue Ridge Mountain Resources, Inc.	PetroChina	Synergy Resources Corporation	
Chesapeake Energy Corp.	ExxonMobil	Marathon Oil Corp.	Pioneer Natural Resources Company	T-Rex Oil, Inc.	
Chevron Corporation	Forest Oil Corporation	Mariner Energy	PTT	Total	
Cimarex Energy Co.	Galp Energia	Mid-Con Energy Partners, LP	QEP Resources Inc	Triangle Petroleum Corporation	
Clayton Williams Energy	Gazprom Neft	Mitsui & Co	Range Resources Corp	Unit Corp	
Comstock Resources	Goodrich Petroleum Corp	Murphy Oil Corporation	Repsol	Vanguard Natural Resources LLC	
Concho Resources Inc	Gulfport Energy Corporation	Newfield Exploration Company	Ring Energy Inc	W & T Offshore	

Source: U.S. Energy Information Administration, Evaluate Energy

Note: Some companies merged or split before 2016. A total of 89 companies existed in 2016.

Appendix: List of companies in the downstream analysis

Alon USA Energy	Grupa Lotos	OMV	Sinopec
Blue Dolphin Energy Co	HollyFrontier Corp	Par Pacific Holdings, Inc.	Suncor Energy Inc.
BP Plc.	Husky Energy Inc.	PBF Energy Inc	Tesoro Corporation
Chevron Corporation	Imperial Oil Limited	Petrobras (IFRS US\$ Current)	TNK-BP International Ltd
ConocoPhillips	Indian Oil Corporation Limited	PetroChina	Total
CVR Energy	Lukoil (IFRS)	Phillips 66	TUPRAS
Delek US Holdings	Marathon Oil Corp.	PKN Orlen	Unipetrol
ENI	Marathon Petroleum Corporation	Repsol	Valero Energy Corporation
ExxonMobil	MOL	Rosneft	Western Refining Inc.
Galp Energia	Neste Corporation	Royal Dutch Shell	

Source: U.S. Energy Information Administration, *Evaluate Energy*

Note: Some companies merged or split before 2016. A total of 36 companies existed in 2016.

Background

- The upstream analysis focuses on the financial and operating trends of 89 global oil and natural gas companies (called *energy companies*), and the downstream analysis focuses on 36 companies
- The data come from the public financial statements each company submits to the U.S. Securities and Exchange Commission, which a data service (Evaluate Energy) aggregates for ease of data analysis
- For consistency, an energy company's assets that were acquired by another company in the group after 2007 were kept in the prior-year data
- Several charts show comparisons between energy companies and the U.S. manufacturing industry, collected from U.S. Census Bureau's *Quarterly Financial Report*

Brief description of terms

- *Cash from operations* is a measure of income
- *Capital expenditure* represents cash used for property, plant, and equipment
- *Financing activities* measure inflows/outflows in debt or equity markets including dividends, share issuance or repurchases, and debt issuance or repayments
- *Return on equity* is a measure of the profit a company earns on money shareholders have invested
- *Market capitalization* is the total value of all of a company's publicly traded shares outstanding

Brief description of terms

- *Net income* represents profit after taxes and depreciation
- *Asset impairments* occur when a company lowers the estimated value of a property to reflect current market value, which may result from loss of production potential or declining oil prices
- *Upstream* refers to crude oil exploration, production, and other operations prior to refining
- *Downstream* refers to refinery operations, product sales, and marketing at the wholesale and retail levels