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Out of America: Aspects of the US crude export debate

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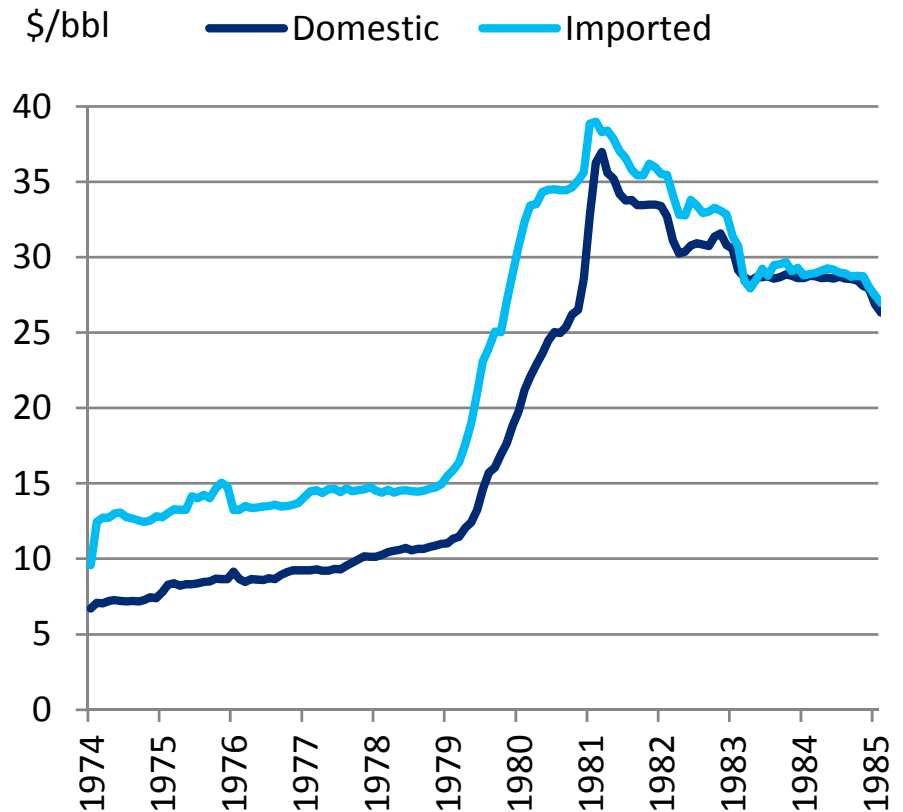
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Pre-amble: Two puzzles about the crude export debate

- Why is it OK to export food and refined fuel, but not crude oil?
- Why do people think the crude ban is really for national security reasons?
- The beginnings of the US export ban
 - 1973 Arab oil embargo and price spike – was it geopolitical risk? No.
 - 1958: US crude oil prices post-1958 quota system; US prices were double world prices
 - Aug 1971: US freezes prices
 - 1973 Arab embargo: US prices fell below world levels until decontrol of prices (1979-81)
 - US price controls as world oil prices rose above US oil prices
 - This incentivized US crude exports and resulted in local gasoline shortages, hence the export ban
- By end-2014, the US could be exporting another 200-k b/d to Canada (to 400-k b/d), another 100-k b/d from Alaska, perhaps 100-k b/d to Mexico, 100-k b/d of re-exports, and maybe 300-k b/d of condensates if reclassified as petroleum products.

US refiner acquisition cost of domestic vs. imported crude oil (\$/bbl, 1974-1985)



Too much of a good thing – refinery expansions overwhelmed by crude glut

Light sweet crude oil is being produced from US shale plays, but the US refinery system is complex and would prefer heavier sourer crudes

- Refinery capacity expansion plans have burgeoned
- In addition, there could be some 10-50-k b/d of small teapot refineries in the Eagle Ford
- But this capacity is overwhelmed by production growth in the Eagle Ford (+400-k b/d y/y in 2013) and Permian Basin (+140-k b/d y/y in 2013), as well as growing flows from Cushing via Keystone Gulf, Seaway twin, and other pipeline projects
 - Pipelines into Cushing are growing too in 2H'14, notably Flanagan South, Pony Express
 - Rail receiving capacity in PADD III has grown to ~2-m b/d
- Why new refineries won't be built
 - Expense
 - Uncertainty
 - History

		Existing	2014	2015+
MDU/CLMT Dakota Prairie	Dickinson, ND		20	
Three Affiliated Tribes, Makoti	Dickinson, ND			20
Dakota Oil Processing	Trenton, ND			20
American Energy Holdings, Bison Oil	Devils Lake, ND			20
North Dakota refinery additions			20	60
BASF/TOTAL	Port Arthur, TX	75		
Kinder Morgan condensate splitter	Galena Park, TX		50	50
Marathon condensate splitters	Canton, OH	22	38	
	Catlettsburg, KY			
Martin Midstream Partners LP	Corpus Christi, TX			100
Magellan Midstream	Corpus Christi, TX			100
Castleton Commodities Int'l	Corpus Christi, TX			100
Condensate splitters		97	88	350
Valero expand light crude processing	Port Arthur, TX		15	
Valero topping unit	Houston, TX			90
Valero topping unit	Corpus Christi, TX			70
Valero refinery expansion	McKee, TX		25	
NCRA refinery expansion	McPherson, KS		15	
Tesoro refinery expansion	Salt Lake City, UT		4	
HollyFrontier refinery expansion	Woods Cross, UT			14
Western refinery expansion	El Paso, TX			25
Husky refinery revamp	Lima, OH			
Alon refinery expansion	Big Spring			5
Expansions			59	204
Total		97	167	614

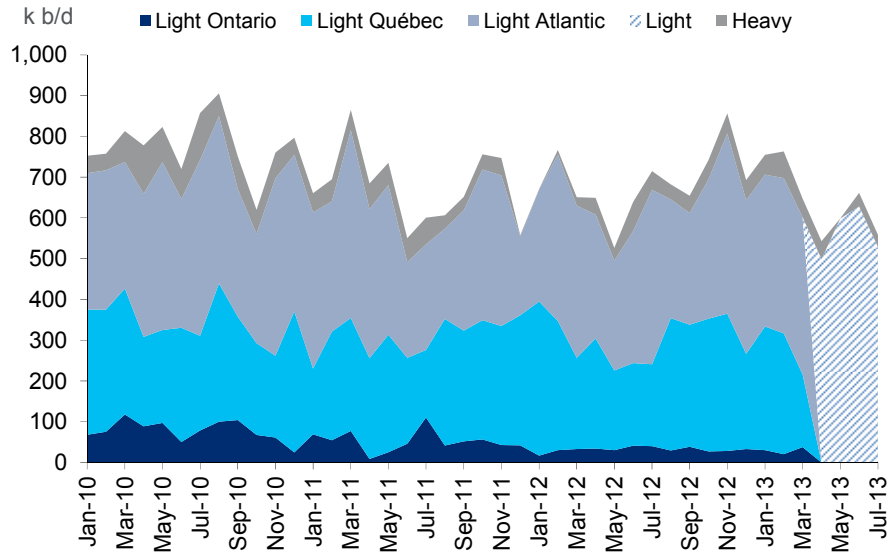
Source: Company reports, Citi Research

Sooner or later, given production growth, more exports need to be considered

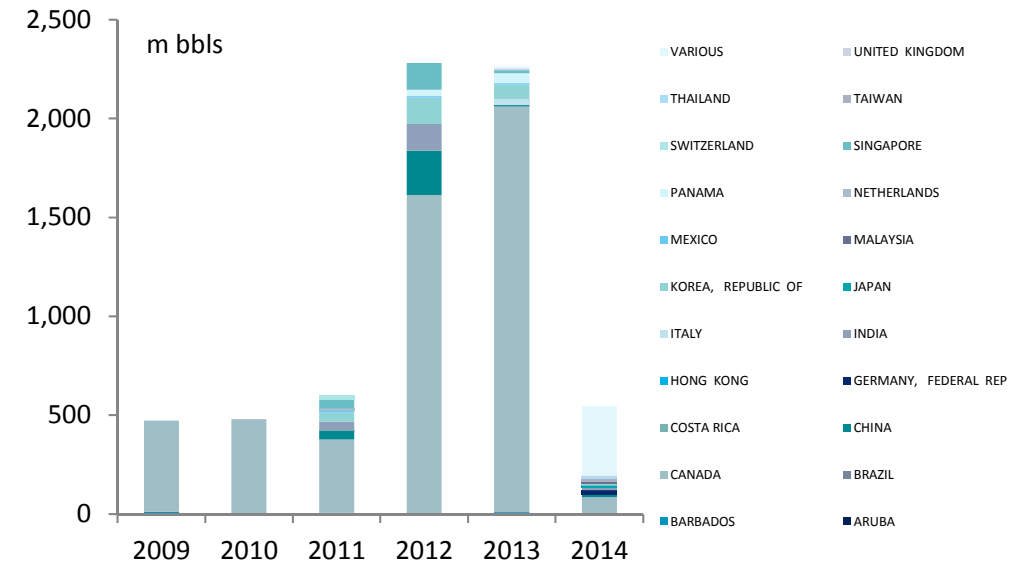
Competing for the Eastern Canadian crude market

Eastern Canada is an export destination allowable under current regulations, US crude is already making its way there in increasing volumes by tanker and rail, with rail receiving capacity likely growing to ~150-k b/d in 2014

Eastern Canadian crude imports, by region and quality*



US crude export license applications on the rise, mostly to Canada, increasingly to other destinations

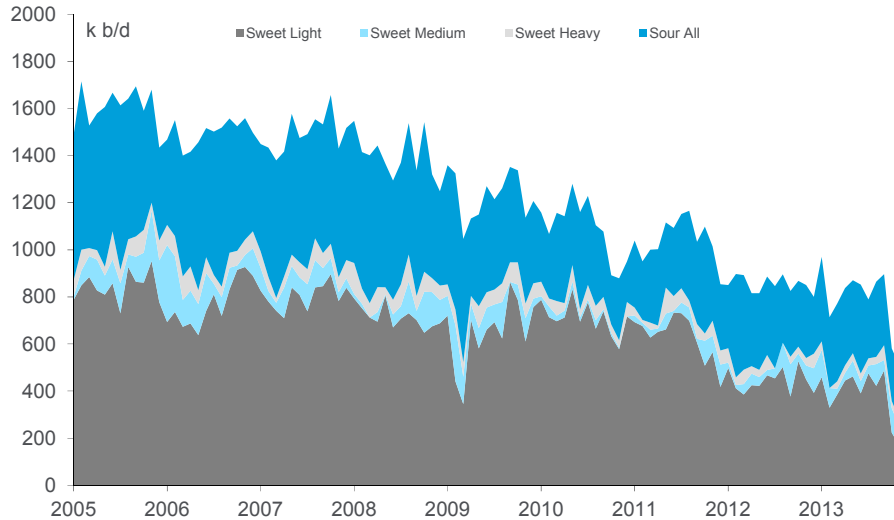


- Eastern Canada still imports some 500-700-k b/d of mostly light sweet crude. USGC exports to Canada already rose to 200-k b/d in November, mostly from PADD I and PADD III, could double in 2014 to 400-k b/d
- Pipeline supply to eastern Canada competes with waterborne flows from late-2014.
 - Line 9 reversal and extension (300-k b/d) has seen the Sarnia to Westover, ON flow since mid-2013, but the further extension to Montreal is seeing opposition and delays – had been planned for 2H'14 but now looks more like 2015
 - The 1.1-m b/d Energy East pipeline should tighten up PADD II balances as western Canadian crude is diverted to the eastern Canadian coast, backing out US exports to eastern Canada

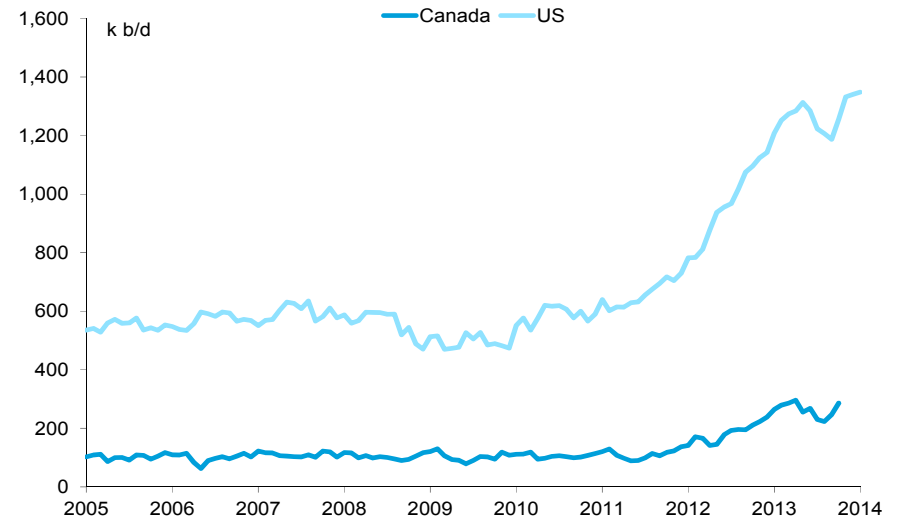
Competing for the US East Coast market

The US East Coast has some 1.3-m b/d of refinery capacity, mostly focused on light sweet crude processing. Its access to fast-growing shale crude has been limited by rail capacity and the Jones Act.

PADD I light sweet imports have plummeted to 200-k b/d



Crude and petroleum products transported by rail car

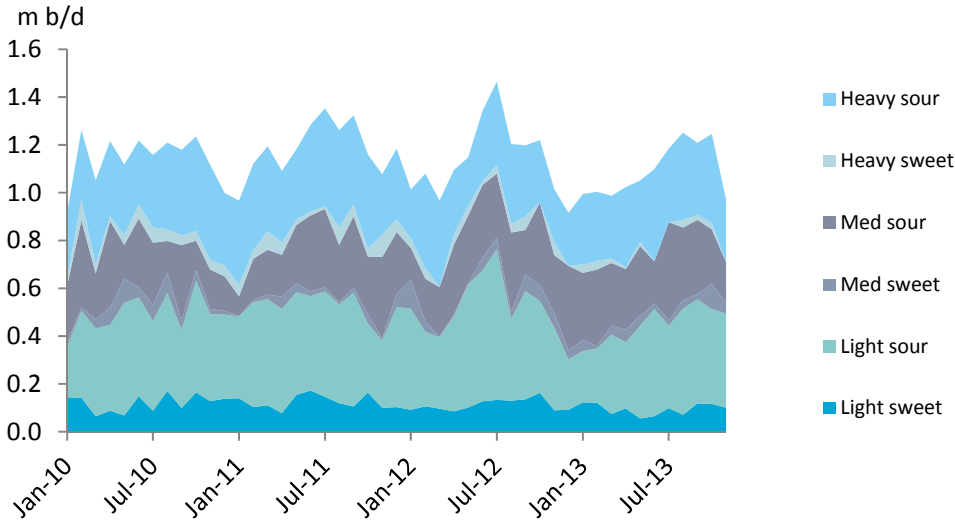


- The US East Coast imported some 500-k b/d of light sweet crude over most of 2012-13 but this has fallen to 200-k b/d in 2H'13 as rail volumes picked up
 - Bakken rail has pushed out some of that, as price differentials facilitated this
 - East Coast rail receiving capacity has grown to ~1-m b/d in 2014 from nothing in 2011

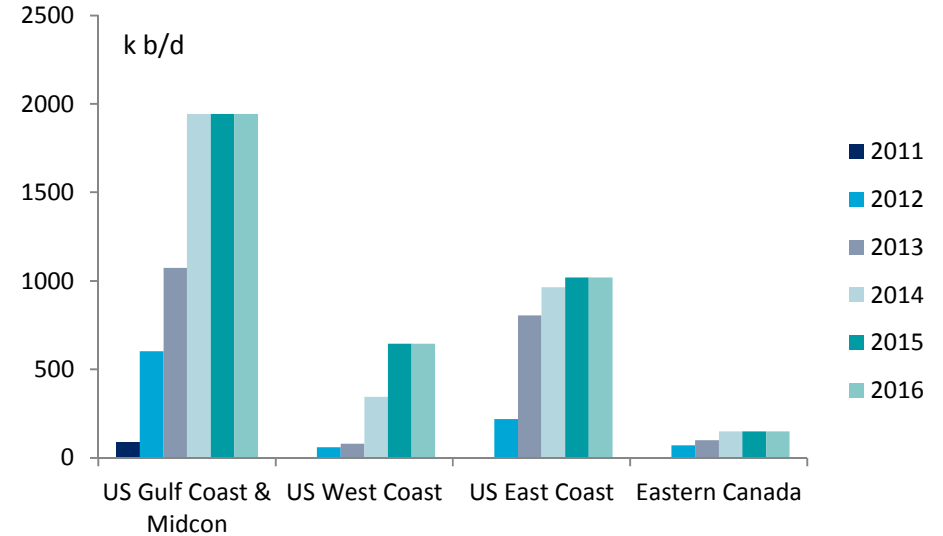
West Coast exports are about to start

Substituting Alaskan supply with railed western Canadian and Bakken plus Mexican crude to PADD V could free up ANS to be exported to Asia; exports of Alaskan crude are allowable under current regulations

PADD V crude imports by quality (2010-13)



Planned crude-by-rail receiving capacity by region



- West Coast rail receiving capacity in California and Washington State growing to the over 600-k b/d level
- Mexican supply from Salina Cruz terminal of Isthmus crude, diverting away from US GoM
- This should free up ANS to be exported to Asia; South Korea is a likely target, with its tax-advantaged crude import rules; this could erode Brent exports to Korea.
- Some 100-k b/d of Alaskan crude could be exported by the end of 2014

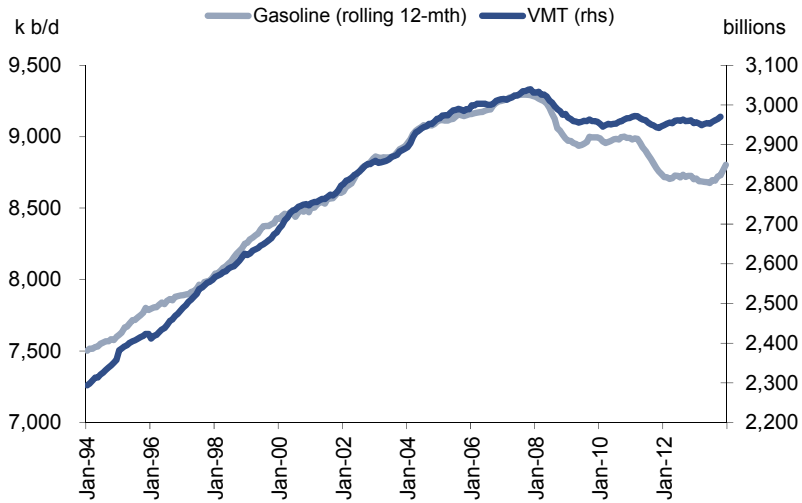
Source: EIA, company reports, Citi Research

Do higher crude prices mean higher gasoline prices?
Yes and no...

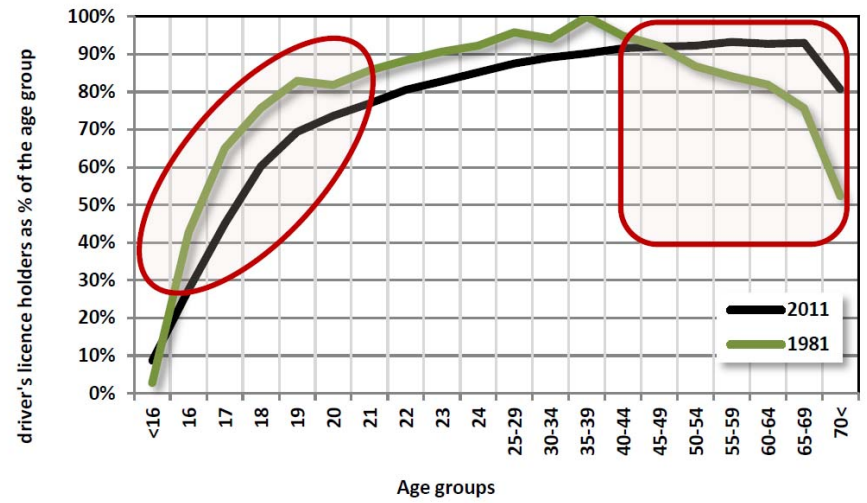
Gasoline demand in the US

While the pick-up in employment and economic activity and lower prices can boost VMT, other structural downward pressures look to continue: fuel efficiency, demographic change, urbanization, NGVs and EVs

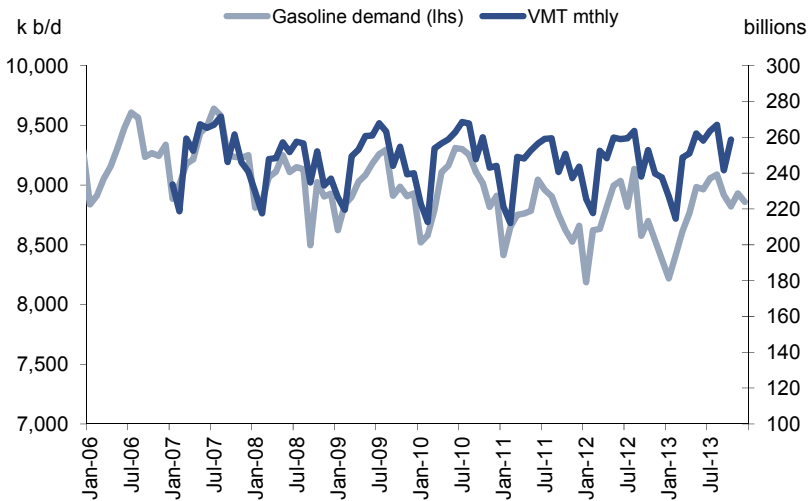
Gasoline demand has been declining since 2008 as VMT stagnated and fuel efficiency has risen...



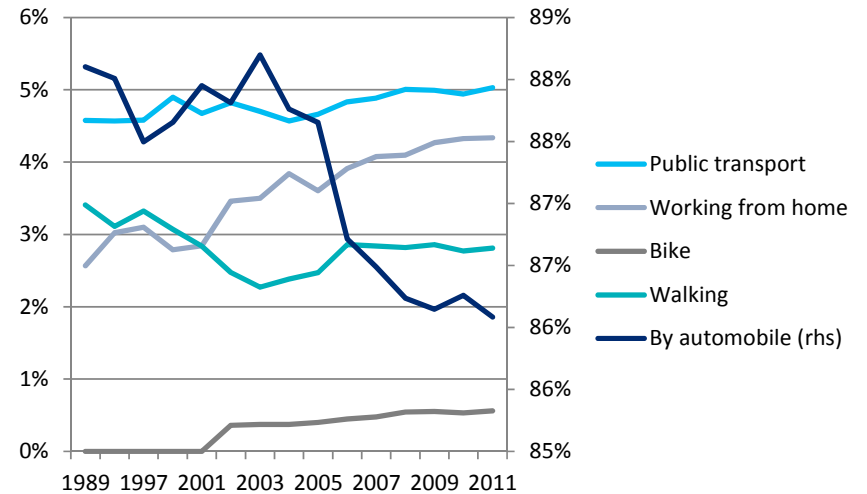
Younger age groups represent a smaller proportion of driving license holders in the US



...though VMT has started to tick up, gasoline demand too



Commuting by car stepped down, and could stay low

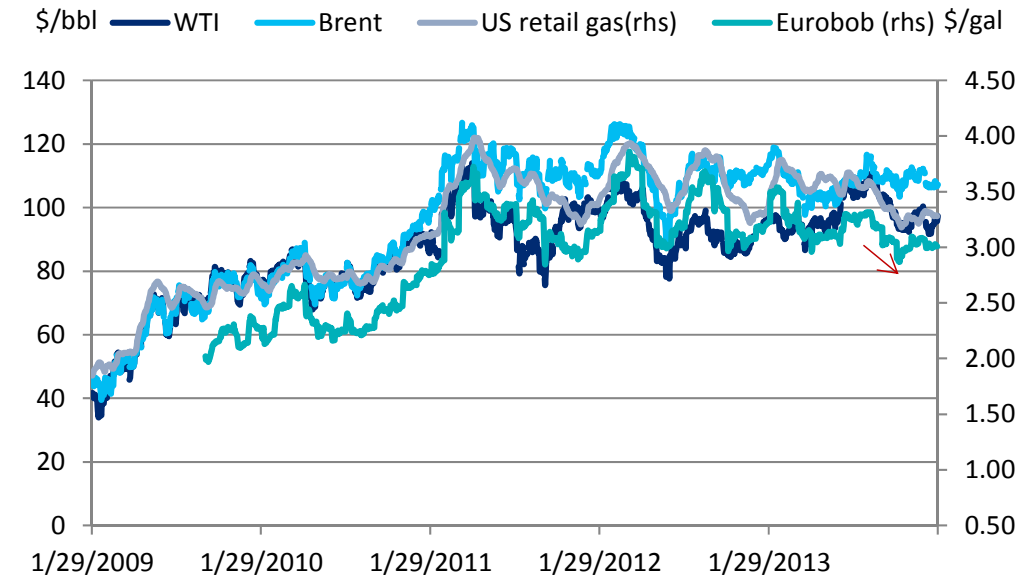


Source: US FHWA, US BTS, US NHTS, FGE, Citi Research

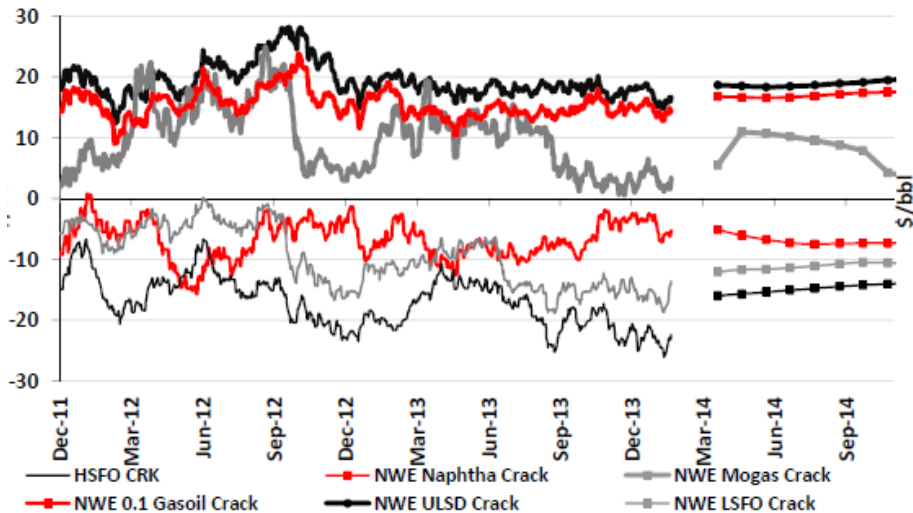
How would crude exports impact US gasoline prices?

- Are US gasoline prices diverging from world gasoline prices? US retail gasoline prices appeared to be moving more closely with WTI since 4Q'13, but this was also as European gasoline prices also weakened; refinery margins were severely challenged.
- Inland retail gasoline prices fell relative to PADD I prices, with high refinery utilization and hence robust local supply; potential constraints on movements out of PADDs could keep inland prices pressured.
- Crude exports would raise the price of crude in the US, though US refiners should still be advantaged versus, say, European refiners. Would this lower refinery utilization in the US? Raise refinery utilization in Europe, elsewhere? On balance, global crude prices should fall, while the US should continue to have robust domestic gasoline surplus.

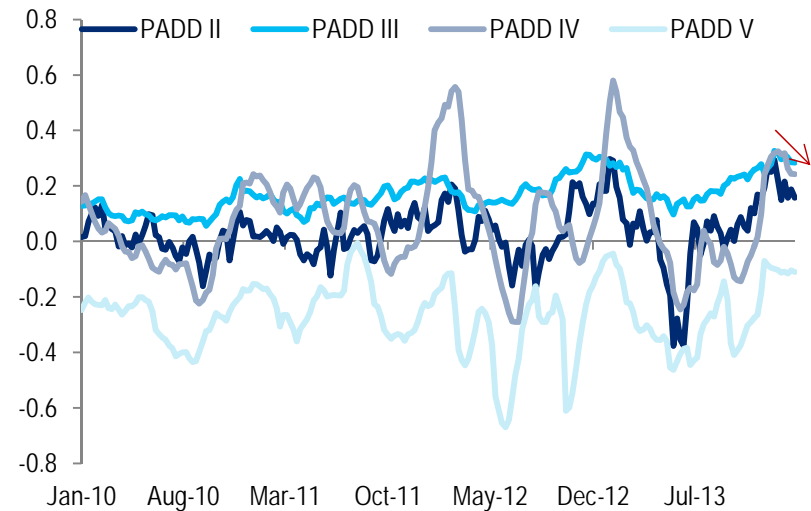
US retail gasoline and Eurobob vs. WTI and Brent prices



NW Europe product cracks saw gasoline weaken in 4Q'13



Regional vs. PADD I retail gasoline price spreads (\$/gal)

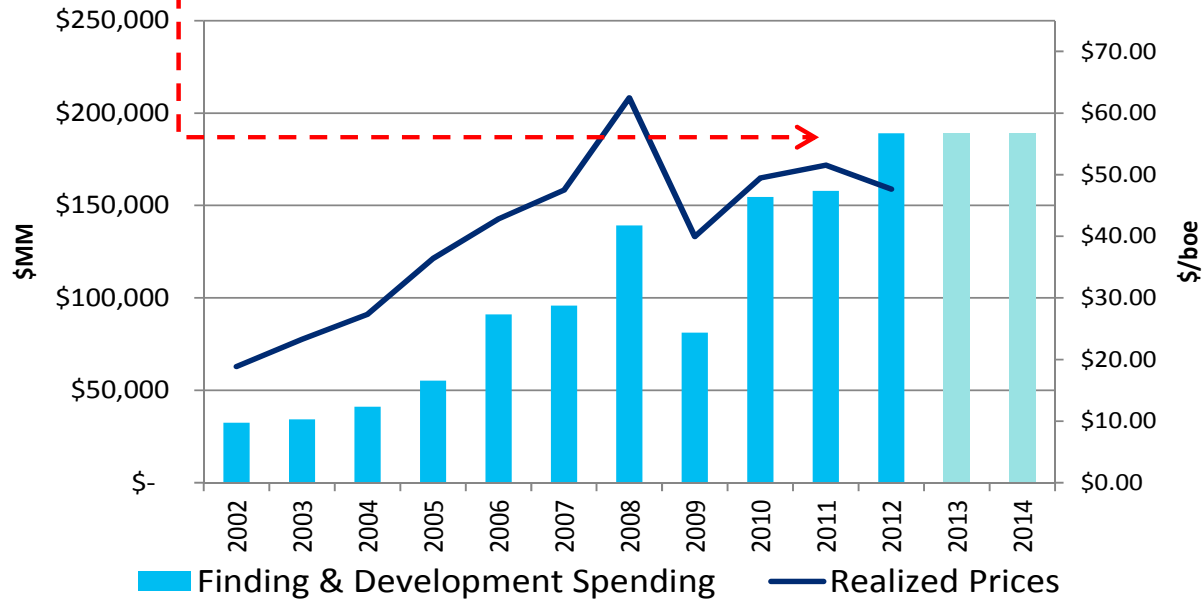


Source: EIA, Saudi Aramco, US Census, Citi Research

Higher prices would stimulate more production, while lower prices would stymie output

US capex still robust, efficiency is rising, but cash flow negative

Capital spending surged in 2012, looks soft in 2013-2014



Results of oil and gas operations, \$millions, 2008-12

	2008	2009	2010	2011	2012	'11 - '12 % change
Oil & gas revenue (a)	\$211,357	\$149,757	\$190,391	\$204,388	\$202,787	-1%
Lifting costs	\$51,007	\$41,924	\$55,716	\$56,298	\$62,145	10%
Exploration expenses	\$6,023	\$5,836	\$5,423	\$6,130	\$7,610	24%
DD&A (Incl. write-downs/impairment)	\$89,854	\$88,952	\$58,797	\$60,523	\$95,997	59%
(Write-downs/impairment) incl. above	\$45,673	\$40,568	\$6,357	\$7,326	\$28,918	295%
Other expenses/(income)	\$4,704	\$3,685	\$3,251	\$4,163	\$326	-92%
Pre-tax profit	\$59,770	\$9,360	\$67,203	\$77,273	\$36,710	-52%
Income tax/(benefit)	\$23,301	\$2,659	\$22,598	\$28,861	\$13,062	-55%
Net income (b)	\$36,469	\$6,701	\$44,605	\$48,412	\$23,648	-51%
Cash flow	\$134,533	\$102,319	\$109,599	\$116,124	\$128,046	10%
Free cash flow	(\$4,653)	\$21,125	(\$45,074)	(\$41,814)	(\$60,975)	46%

Source: IHS Herold, Global Upstream Performance Review, United States Results, 2013.

But there is another side to the story

The land grab significantly skewed results on two levels; the land grab phase is in many cases being replaced by more efficient operations

- Until 2012, much of capex was on acreage acquisition
- Much of the funding was via joint ventures (often with foreign companies) or VPPS, or sale of non-core acreage
- In addition to high and rising per acre acquisition costs, work requirements were fulfilled at minimum levels as the land grab continued and as minimum spending was needed to hold acreage and meet minimal obligations; this process masked underlying efficiency gains, and understated the pace of technological growth
- Lower-than-expected natural gas prices reduced cash flow against expectations and often firms turned to oil directional from natural gas directional drillings
- Only now as a more mature phase of development is entered should cash flows in some plays start to exceed capex
- Companies with extensive resource bases should start seeing solid cash flow growth, with output increases potentially accelerating

(See Robert Morris, “Chesapeake Energy Corp (CHK)” Citi Equities Research, 24 October 2013, for a solid case study of this process)

Appendix A-1

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