

Testing Time for Saudis, Strategic Stocks?

Assessing cushions to an oil supply disruption

- Commodities
- Focus on MENA
- Geopolitics
- Petroleum

- **In recent weeks, the probability of a coordinated release of strategic stocks has risen significantly.** The US and EU sanctions have impacted over 1-m b/d of Iranian crude exports, transportation fuel prices worldwide remain high (with Euro weakness) and global middle distillate inventories are low going into the winter. Hurricane Isaac closed 2-m b/d of US refining capacity, tightening gasoil markets further, resulting in a small release of stocks to one refiner, and South Korea and other Asian buyers may raise Iranian imports soon, eroding the sanctions impact on Iran. This is as the latest IAEA report indicated that Iran's nuclear program continues to advance. Last week's G-7 statement sought higher OPEC output and coordinated IEA action, but was mostly rebuffed outside the US, UK and France.
- **An SPR release would help reintroduce two-way risk into oil markets;** currently, geopolitical and macro risks are skewed to the upside – even bad economic data releases, in making QE3 more likely, are supportive. Meanwhile, global refining runs are poised to move into their seasonal autumn trough, meaning an SPR release over this period could be more effective. And with speculators relatively long, shaking out this length could ease pressure on oil prices.
- **Cushions against a supply disruption look better than earlier this year,** when many analysts, including Citi's, were skeptical of their size and effectiveness. The Kingdom claims 12.5-m b/d of productive capacity, but 0.7-m b/d could be too heavy/sour than is demanded by oil markets, implying ~1.8-m b/d of spare capacity. But Saudi Arabia has bolstered its inventories with sustained oil production of ~10-m b/d, with domestic stocks at 278-m bbls in recent data, and ~10-m bbls overseas. But if the Saudis do consider prices too high, why not raise production further or reduce premia on their Official Selling Prices? The market may begin questioning Saudi capacity again shortly. Meanwhile, crude pipeline capacity bypassing the Strait of Hormuz is now ~5-m b/d higher due to new capacity and de-mothballing.
- **The US SPR claims a drawdown rate of 4.25-m b/d, but is likely to be far lower.** Last year, during the Libyan disruption, the highest observed release rate was 845-k b/d, likely due to logistical congestion; given the crude glut in the US midcontinent, oil does not need to be piped inland from the Gulf Coast. And waterborne distribution would face congestion from existing port activity. However, if seaborne imports were disrupted, SPR release rates could perhaps reach 2-m b/d.
- **But these cushions would still be hard pressed to absorb a full disruption of the Strait of Hormuz.** A year ago some 17-m b/d of oil flows might have been at stake; today this could be closer to 10-m b/d given new pipeline connections, so a two-week disruption of flows today would amount to 140-150-m bbls. Thus a disruption could be covered by a 120-m bbl release (double the IEA release last year), and Saudi Arabia and other producers drawing down ~30-m bbls of stocks deployed globally. But this is a best case scenario; a failure in Hormuz pipeline bypass capacity, Saudi export facilities or SPR congestion would still mean significant shortfalls and significantly higher prices.

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See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Testing Time for Saudis, Strategic Stocks?

In recent weeks the probability of a coordinated release of strategic stocks has risen significantly.

In recent weeks the probability of a coordinated release of strategic stocks has risen significantly. In addition to the disruption of more than 1-m b/d of Iranian exports caused by US and European Union sanctions, high transportation fuel prices globally (which are exacerbated by the relative weakness in the Euro), and low middle distillate inventories heading into the winter, two other issues have emerged: Hurricane Isaac's closing of some 2-m b/d of US refining capacity has tightened an already tight gasoil market; and the increase in liftings of Iranian crude by South Korean and other Asian buyers appears to be a potential opening for further erosion of sanctions.

The G-7 statement released earlier this week seeking higher output by OPEC producers (later rebuffed) and effectively asking the IEA to consider coordinated action point to growing economic and political incentives of a move sooner rather than wait for another disruption that might accompany military action in the Gulf. Amidst formidable geopolitical tail risks to both the upside as well as supply and macroeconomic/demand tail risks to the downside, Brent-related oil prices have moved back to \$110-115 levels, after falling to as low as \$90 in June on high Saudi production, robust North American supply growth, macro risk-off and dollar strength.

Weather and technical disruptions and seasonal refinery demand have added to Iranian and Syrian geopolitical risk to pressure prices upwards

The hurricane season is further tightening a seasonally constructive crude oil market. With the summer peak of seasonal refinery crude demand, substantial Iranian volumes lost to sanctions and a spate of supply disruptions, particularly high levels of North Sea oil field maintenance, prices have remained high. Fears of further disruptions due to simmering tensions with Iran (including disruptions to oil transported via the Strait of Hormuz) as well as potential spillover from the Syrian civil conflict to regional major oil producers are supportive for oil markets and could cause upside spikes, as could another hurricane or two.

The escalating civil war in Syria and heightened Israeli rhetoric over a potential strike on Iran's nuclear facilities in recent weeks have fueled market and policy expert concerns of increasing geopolitical risk in the Middle East. While the risk temperature has undeniably increased in the aftermath of the Arab Spring and ongoing shifts in regional political and security dynamics, Citi continues to believe that the probability of an Israeli-led strike in Iran ahead of US elections in November is no more than 25%, though it cannot be ruled out. In our view, however, the probability of conflict is likely to increase in 1H 2013. Developments in Syria, where civilian casualties continue to mount and the prospects of a negotiated political transition diminish, pose a major wildcard, both to the timing of a potential strike on Iran and in terms of the threat of regional spillover. In our view, the conflict is unlikely to be internationalized unless the regime resorts to using chemical weapons, or if its chemical weapons stocks are thought to be insecure.

It is thus worth assessing the magnitude and effectiveness of existing cushions to a supply disruption. This report reviews the state of global supply-demand balances moving into the 4Q of 2012 and discusses Saudi spare capacity, Saudi crude inventories at home and abroad, new pipeline capacity that bypass the Strait of Hormuz, and International Energy Agency (IEA) members' strategic stocks, particularly the strategic petroleum reserve (SPR) on the US Gulf Coast and a realistic assessment of its drawdown potential.

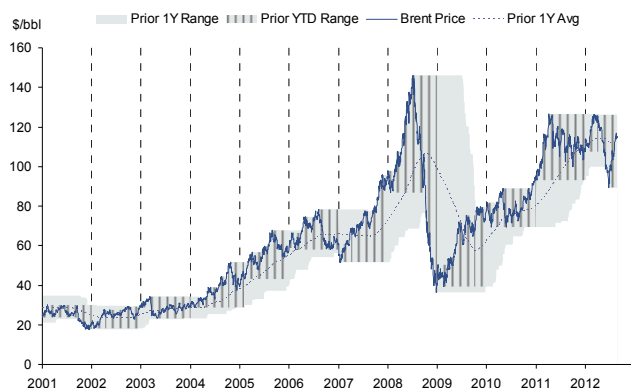
How tight are markets becoming?

2012 has been a year of both upside and downside tail risks

Global oil prices in 2012 have been averaging annualized record high levels and have been buffeted by substantial upside and downside tail risks, with Iranian nuclear tensions at the forefront, pushing Brent prices well above \$120 in March before elevated Saudi production kept pace with lofty rhetoric and, combined with

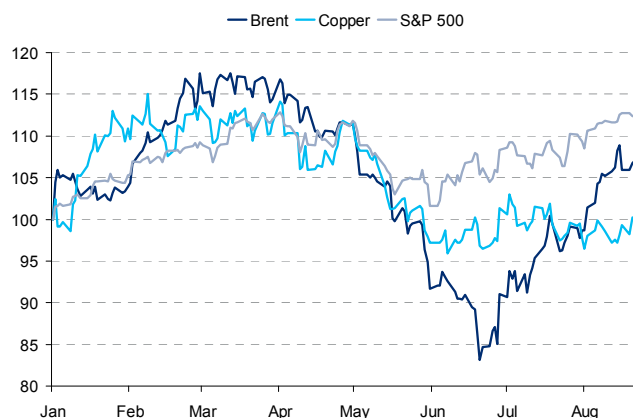
robust growth in North American supply, drove significant global crude inventory builds that loosened markets. With the May sell-off across asset classes coinciding with the trough in global refinery crude demand, this brought prices down to below \$90 before the seasonal crude demand ramp-up into the summer tightened markets again. Brent has been at \$110-115 levels since early August.

Figure 1. Brent rebounds to 115 after breaking to downside in 2Q



Source: Bloomberg, Citi Research

Figure 2. Brent, LME copper and S&P 500 (Jan 1, 2012 = 100)

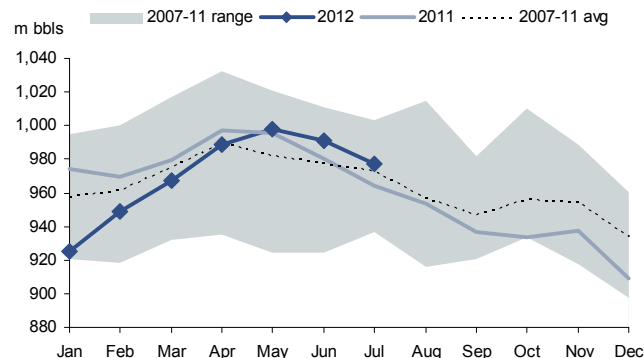


Source: Bloomberg, Citi Research

Global and disparate supply disruptions continue to ail oil markets, though there could be some easing on the horizon

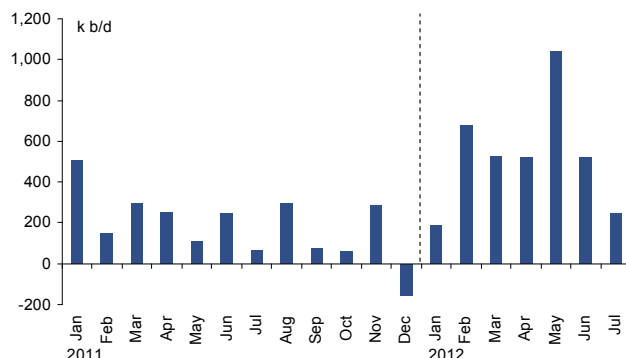
Disparate supply disruptions globally (at 1-m b/d levels ex-Iran) have been ongoing (Figure 7), although some easing in long-challenged Yemen volumes is taking place after oil workers were able to get to damaged sections of oil pipelines in the restless Marib region. Sudan and South Sudan – after a prolonged stand-off over pipeline tolls for South Sudanese oil passing through Sudan that left 350-k b/d shut-in – have reached an apparent truce for now, and production volumes could return by early next year.

Figure 3. Global OECD crude inventories built quickly Jan-May



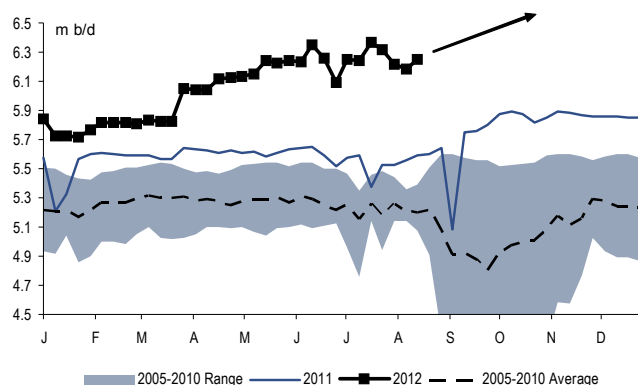
Source: IEA, Citi Research

Figure 4. Chinese surplus of crude production and imports over refinery throughputs, as indicator of implied crude stock builds



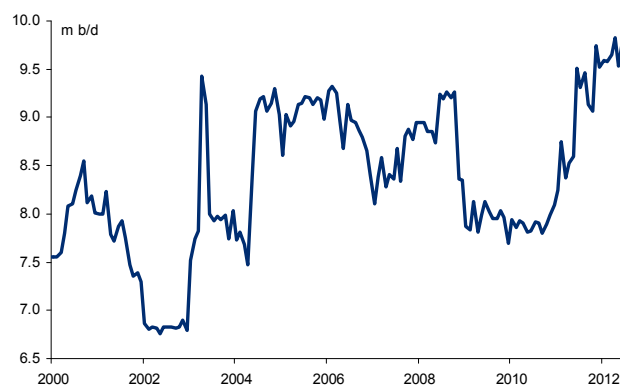
Source: China Customs, Citi Research

Figure 5. US crude production has been growing robustly



Source: EIA, Citi Research

Figure 6. Saudi crude production holding at historically high levels

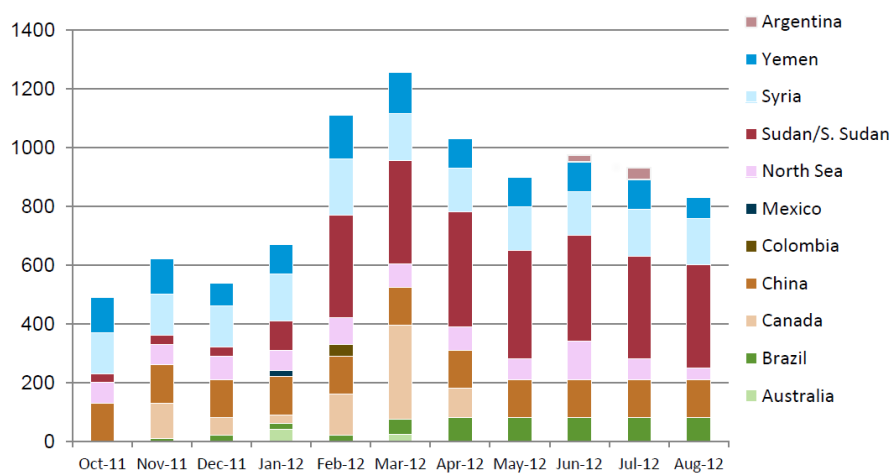


Source: EIG, Citi Research

Tail risks aside, supply-demand balances into 4Q'12 are bearish on a top-down basis

Looking forward into 4Q'12, global balances look bearish on a top-down basis. Two sources of robust supply - Saudi Arabia and North America – remain strong and are expected to remain so going forward (Figures 5 and 6). Seasonally, refinery crude demand ramps-down into September and October by 2- to 3-m b/d from the August peak. Some recent strength in Brent was due to very low North Sea crude loadings in September due to Buzzard field maintenance, but this should return and ease prices, while several new Angolan fields should start-up and presage a surge in West African production. Saudi production, already high, could be bolstered as availability improves once its peak summer period for direct crude burn for power generation passes. Yemeni and South Sudanese crude could be returning to the market in Q4. And global oil demand growth remains subdued on a year-on-year basis, with Chinese petroleum product demand in particular registering close-to-flat and even some months of negative year-on-year growth.

Figure 7. Estimated unplanned non-OPEC production disruptions, Oct 2011 to Aug 2012 (k b/d)

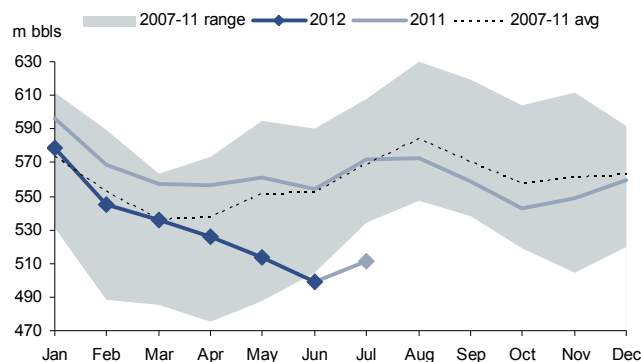


Source: EIA

Despite global – and Chinese – macroeconomic weakness, product markets remain surprisingly strong, especially gasoil

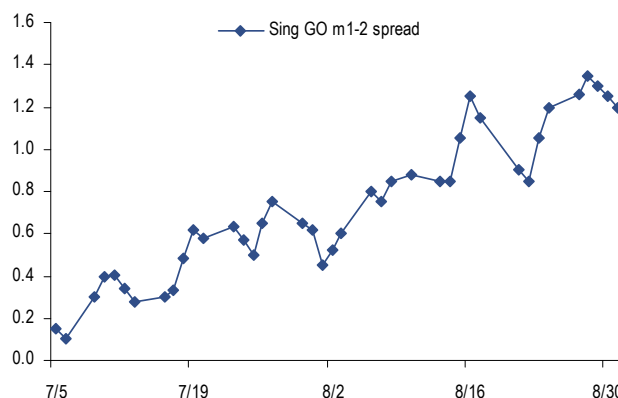
But product and particularly gasoil prices remain worrisome for policy makers, with retail fuel prices in local currencies at high levels given Euro weakness. Gasoil in particular has been surprisingly strong (Figure 9), suggesting that something much more than low refining throughput in gasoil-short Europe is at work. There could well be more robust demand in less-transparent non-OECD regions outside of China – boosted by weather and power outages in India and elsewhere – as well as being bolstered by refinery maintenance and outages in Japan, Thailand and Vietnam. Distillate inventories worldwide are looking low going into the peak winter demand season (Figure 8). The onset of hurricane season has seen Isaac shut around 2-m b/d of US Gulf Coast refinery capacity; combined with the deadly explosion at Venezuela's critical Amuay refinery, which now looks to be shut-in well past September, have tightened global product markets further. Tighter gasoil markets add to the probability of an SPR release.

Figure 8. Global OECD middle distillate stocks*



Source: IEA, Citi Research *Preliminary July data

Figure 9. Singapore gasoil remains strongly backwardated (\$/bbl)



Source: Bloomberg, Citi Research

The Iranian stand-off continues

The Iranian nuclear impasse has made no apparent progress since P5+1 talks stalled over the summer, while Israeli rhetoric on an attack on Iran continues to slide upwards with the perception of Iran moving closer to the so-called "zone of immunity". While Israel remains unlikely to move unilaterally without American support, and there is little US appetite for any flare-up of Middle East tensions ahead of the US Presidential elections this Fall, market chatter over an increasing probability of a late September or early October Iran strike could keep the geopolitical risk premium in play. The findings of the recent IAEA report will likely compound fears that Iran's nuclear program has continued to advance despite sanctions and will keep pressure—and headline risk—high.

Our view is that the risk of an Israeli unilateral attack ahead of US elections in November is substantial, yet more likely in 1H 2013

The July 17 departure of Kadima from the government coalition in Israel could alter Israeli Prime Minister Benjamin Netanyahu's political calculus, and recent polling has suggested low support for an attack on Iran among the Israeli public. Some actors from Israel's military and security establishment have also voiced concerns, often in remarks to the press, about the risks of an attack relative to its limited potential success in reversing Iran's progress on its nuclear program. In the abstract, these factors could constrain Netanyahu's willingness to act unilaterally.

A key variable in the Israeli calculation is the notion of a "zone of immunity," as described by Defense minister Ehud Barak— a point beyond which the Iranian

Netanyahu commands a majority in the Knesset, but with elections due by October 2013, campaign priorities may take precedence.

The risk of military action against Iran's nuclear sites by Israel ahead of US elections could be as high as 25%, in our view, and may increase in the 1H of 2013

nuclear program cannot be stopped, even after military action. Our view is that the risk of a unilateral attack is substantial. Even so, we believe that pressure from Washington to avoid a confrontation ahead of US elections means that any potential military action is more likely to take place in 1H 2013.

On the Iranian side, diplomats left a second round of talks with the P5+1 Group in Moscow in June without agreement, even on the date for their next meeting. EU oil sanctions came online in July, and the threat of a collapse in diplomatic negotiations could increase rhetoric for military action. Nevertheless, in our view, a major concession from Tehran is unlikely in the near- to medium-term.

The risk of military action against Iran's nuclear sites ahead of US elections could be as high as 25%, in our view, and may increase in the first half of 2013 if no action takes place ahead of US elections. We expect to see headline risks increase as the year progresses.

The findings of the latest IAEA report will likely compound fears that Iran's nuclear program has continued to advance despite sanctions, keeping pressure—and headline risk—high.

Figure 10. Estimated risk of an Israeli attack on Iran, August 2012

Citi Research	Intrade	Israel Democracy Institute	The Atlantic Iran War Dial
25%	27%	33%	40%
"Before US elections" Citi Research note. ¹	"Before December 31" Prediction market. ²	"Will soon launch an attack, even without the cooperation of the US" (Very/moderately high chances) Survey of Israelis, July-August 2012. ³	"In the next 12 months" Panel of U.S. experts. ⁴

Source: Citi Research; see footnotes below for further source details.

On top of this there are recent reports of cyber attacks on the largest oil producer in the world – Saudi Arabia; and on the largest LNG supplier in the world – Qatar. There has been little in the way of public discussion of either of these, but fingers seem to be pointed toward Iran, which was itself the apparent target of cyber attacks over the past two years and was likely to be done in retaliation.

Any potential attack on Iran could mean Iran attempts to make good on their rhetoric for a disruption of the Strait of Hormuz, the key oil chokepoint on their doorstep. "[Assessing an Iranian oil disruption](#)" for a discussion of how long and how deep an impact various military scenarios, including measures to disrupt the Strait, could have on oil markets. The available cushions against supply shocks have evolved somewhat; this report reviews the latest data and assessments of these below.

¹ Fordham, Tina et al. "[Mid-year Outlook: Rising Geopolitical Risks and the New UltraVox Populi Will Carry On Into 2013](#)." Citi Research note. August 2, 2012.

² Intrade. "U.S. and/or Israel to execute an overt air strike against Iran before midnight December 31, 2012." Accessed August 29, 2012. <http://www.intrade.com/v4/markets/contract/?contractId=750356>

³ Israel Democracy Institute. "The Peace Index: July 2012." August 8, 2012. <http://www.peaceindex.org/indexMonthEng.aspx?num=244&monthname=July>

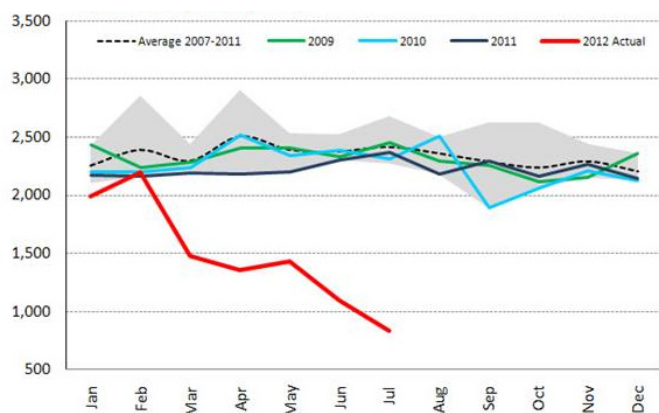
⁴ Goldberg, Jeffrey. "Odds of War With Iran Increase to 40%." *The Atlantic* online. August 29, 2012. <http://www.theatlantic.com/international/archive/2012/08/the-odds-of-war-with-iran-increase-to-40-percent/261724/>

Beyond the geopolitical tail risks of outright conflict, the Iranian situation continues to impact oil markets through lost volumes to US and EU sanctions – and look to be at the peak of their impact as South Korea and other Asian buyers resume imports

But beyond the geopolitical tail risks of outright conflict, the Iranian situation is impacting oil markets through the US and EU-imposed sanctions. The effect of these has been palpable on Iranian supply – but the sanctions impact looks to ease going forward.

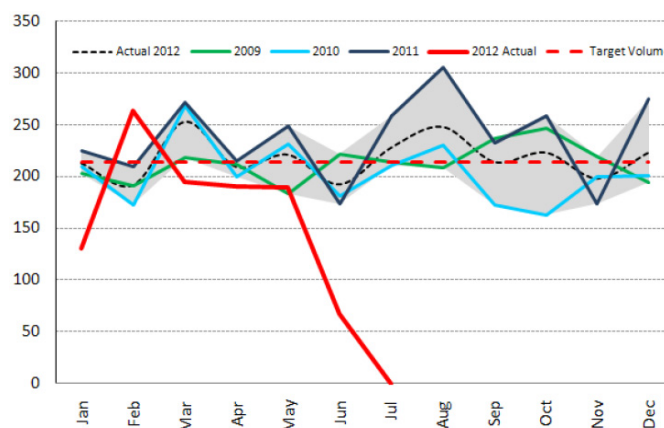
Substantial US and EU sanctions began at the end of June this year, with subsequent strengthening of provisions relating to wider coverage of financial entities and P&I insurance for oil tankers. This has markedly affected Iranian export volumes, which fell from average levels of 2.2- to 2.3-m b/d in 2011 down to below 1-m b/d this July, leaving production levels at multi-decade lows below 3-m b/d. While oil prices saw some increases at times, the sharp fall in exports offset this by far, hurting Iranian oil revenues, which fell from an estimated \$87 billion in 2011 to a shrunken \$29 billion/year levels (on an annualized basis) in July. But current Iranian exports could be at the nadir, and look to begin rising again in September onwards as South Korea and other Asian countries resume some levels of Iranian imports while remaining within the limits of US and EU sanctions.

Figure 11. Iran crude oil exports (k b/d)



Source: Citi Research

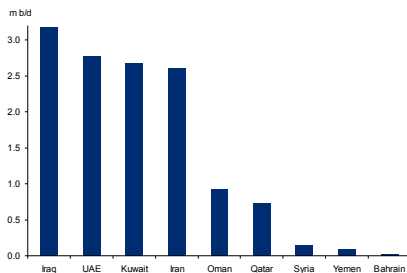
Figure 12. South Korean crude imports from Iran (k b/d)



Source: Citi Research

A resumption of some Iranian exports, though remaining in compliance with the requirement for the sanctions waivers, would still bolster Iranian revenues, eroding sanctions pressure on the Islamic Republic. Current high oil prices are bolstering Iran's oil revenues further, providing further motivation for a strategic stock release.

Figure 13. Selected major regional oil producers crude production in July 2012



Source: EIG, Citi Research

State collapse in Syria?

Meanwhile, the Syrian situation threatens to pull in other actors including Saudi Arabia, Qatar, Turkey, other Gulf states along with the United States and the EU in support of the rebels, and Iran, Russia and China in support of Assad and his regime. Although a modest oil producer itself, Syria could see spill over into major oil producing countries in the wider region.

The civil conflict in Syria has become a cycle of escalating violence, where the rebels grow in their ability to strike at the heart of the regime, as evidenced by the July 18 assassination at the heart of the regime's command centre. Meanwhile, the Assad government has intensified its crackdown in response, retaining significant military capabilities. According to media sources, as many as 19,000 civilians have been killed in the conflict. Senior Syrian civil and military officials have begun to defect in growing numbers in recent weeks. State collapse is an increasingly possible scenario, and the prospects for a Yemen-style negotiated solution have declined as divisions have deepened, raising the risk of greater conflict and regional contagion in our view.

Syria's substantial chemical weapons stockpile, regarded as the largest in the world, is a considerable worry, and as in last year's Libya intervention, has forced the attention of the international community.⁵ Previously, it was clear that the internationalization of the conflict was unlikely given staunch Russian and Chinese opposition at the United Nations' Security Council. Now, however, the potential use of chemical weapons by the regime, or in the event of substantiated fears that they may fall into the hands of rogue actors, would dramatically increase the prospects of the conflict becoming internationalized and possibly spilling over into neighboring countries.

Although the use of chemical weapons would prompt an international outcry and escalate support for regime change, the WMD experience in the Iraq war means that building international support would be far from straightforward, with many likely to question the intelligence information.

⁵ Barnes, Julian et al. "US Concerned as Syria Moves Chemical Stockpile." *The Wall Street Journal*. July 13, 2012.
[<http://online.wsj.com/article/SB10001424052702303644004577523251596963194.html>]

Figure 14. Syria's geo-strategic position in the Middle East



Source: Citi Research

The July 18 assassination of three senior Assad regime figures by car bomb in Damascus underscores the increasingly fragile nature of the regime.

The July 18 assassination of three senior Assad regime figures by car bomb in Damascus underscores the increasingly fragile nature of the regime. But the end could still take weeks or even months. At this writing, it appears that the next stage of the conflict is the battle over Syria's major cities, including Damascus and Aleppo. Thus far, the conflict has largely avoided major population centers; heightened conflict in the cities could accelerate the ultimate outcome in the conflict.

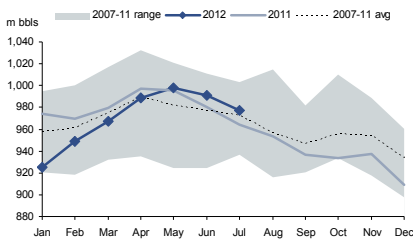
While Syria is a relatively small country without significant natural resources, its geostrategic position in the heart of a volatile region means that the Syrian crisis could create geopolitical risks for a number of actors. Aleppo sits only 45 kilometers from the Turkish border, and the June downing of a Turkish jet, reportedly by Syrian forces, brought a strong response from the leadership in Ankara. To the east, the Maliki government in Iraq is also concerned about destabilization, while for Iran, the continued rule of its ally in Damascus is a key source of support.

Against this background, what are the supply cushions?

Markets were initially skeptical of Saudi assurances that it would ramp-up supply significantly...

Back in the first half of 2012, Saudi oil minister Ali Naimi spent much breath to reassure oil markets that the Kingdom would supply whatever the market required, and that \$100 oil was a notional target. Although markets were skeptical of either or both Saudi willingness and capacity, subsequent data showed global crude oil inventories building substantially, from 909-m bbls at the end-2011 to 998-m bbls by end-May 2012, or an increase of 89-m bbls (585-k b/d). Global oil inventories had been on the low end after the Libyan conflict of 2011 combined with a "one million barrel per day problem" comprised of disparate supply disruptions all over the world for much of the second half of 2011. But the fast pace of global OECD inventory builds took levels back to the 5-yr average level by April and comfortably above it by May (Figure 15).

Figure 15. Global OECD crude stocks



Source: IEA, Citi Research

Figure 16. Saudi crude production



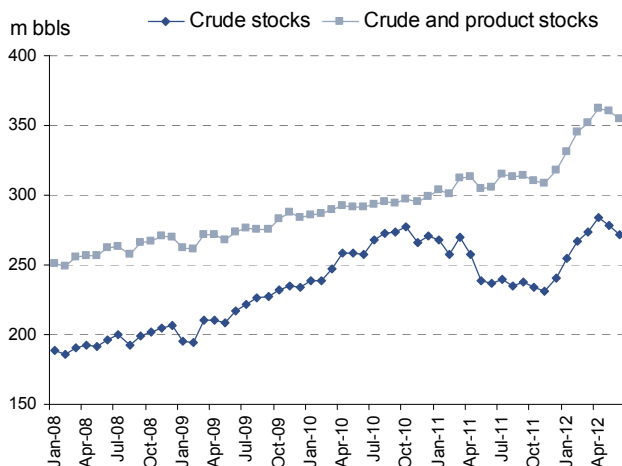
Source: Citi Research

...but Saudi Arabia walked the walk as well as talking the talk, filling global inventories rapidly in 1H'12

This is of course is just the inventory levels reported in the OECD countries. Non-OECD crude stocks, although less transparent, showed substantial stock builds where visible. While skeptics about Saudi Arabia's ability to supply markets adequately from a cushion of spare production capacity last winter pointed to tighter market conditions, since then the Saudis have built additional cushions at home and abroad. Inventories of crude and product can allow the kingdom to supply markets for sustained periods of time at levels well in excess of current production.

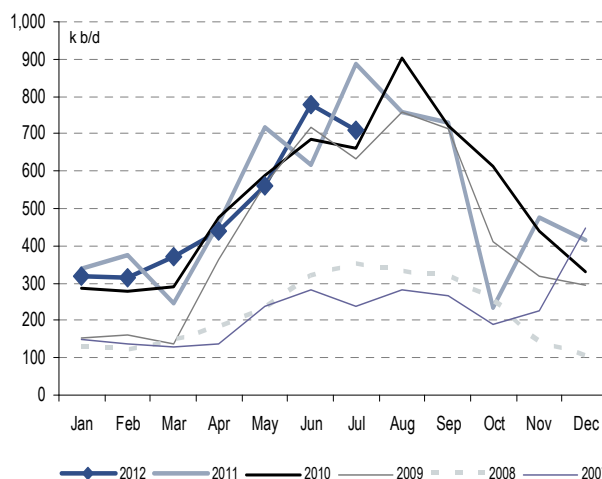
Saudi inland crude stocks burgeoned over 40-m bbls year-to-date by end-April to reach 284-m bbls, before dropping slightly to 272-m bbls in June, according to JODI data (Figure 17). Part of this drop looks due to higher domestic direct burn of crude oil for power generation as the summer rolled-in, with June direct crude use at 778-k b/d, but since dropping back to 709-k b/d in July, or down almost 200-k b/d year-on-year (Figure 18). As the summer turns to fall, direct crude use could drop by 200- to 400-k b/d, releasing crude to be available for export or additional inventory builds. Saudi Arabia also has crude storage tanks overseas, with Naimi saying in March that it had filled these to the brim to 10 million barrels, naming locations in Rotterdam, Sidi Kerir and Okinawa. The Kingdom may well have more storage capacity than this, but not likely more than 10- to 15-m bbls.

Figure 17. Saudi crude and product stocks



Source: JODI, Citi Research

Figure 18. Saudi direct crude burn for power generation



Source: JODI, Citi Research

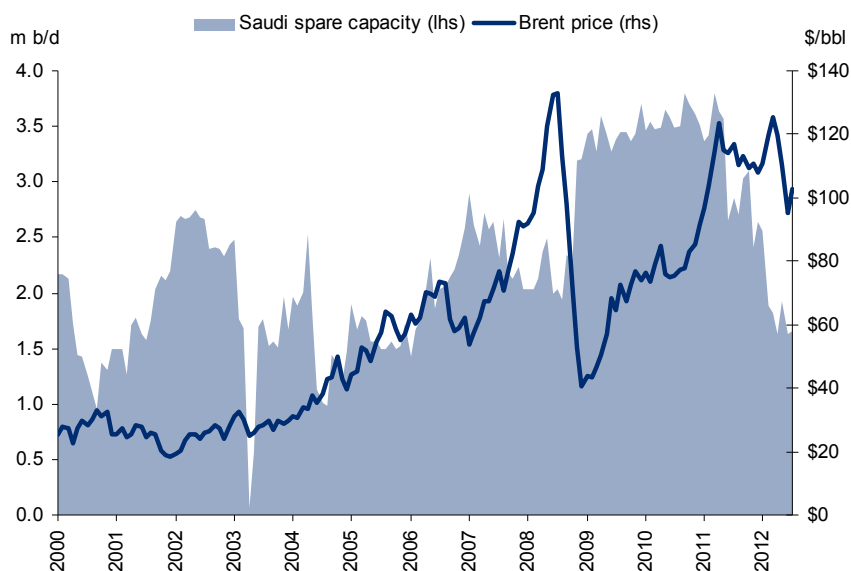
Saudi productive capacity remains elusive, with official claims of 12.5-m b/d but Citi's view that only 11.8-m b/d is "effective" productive capacity

...but the Kingdom likely has more to draw on than meets the eye, with ample inventories able to boost export volumes

But with Saudi production at almost 10-m b/d and likely to stay in the 9.5-m b/d to 10-m b/d range going forward, questions still remain about its spare capacity. The Kingdom has long claimed productive capacity of 12.5-m b/d, leaving some 2.5-m b/d of spare capacity. However, Citi believes that 0.7-m b/d of this could be too heavy and sour than is demanded by oil markets, implying a smaller margin of 1.8-m b/d of effective spare capacity, or 2% of global oil demand. Citi concedes that since last winter Saudi authorities have moved to facilitate remaining spare capacity to be available within the 30-day limit that fits the conventional understanding of spare capacity. However, Saudi Arabia looks likely to have more to draw on than meets the eye. Its reported 272-m bbls of crude stocks – total petroleum stocks are at 354-m bbls – are a substantial cushion that can boost Saudi exports in the short-term, representing over 30 days of export cover at 8-m b/d levels. Saudi export facilities have a good deal of redundancy built-in; other than substantial capacity in the Gulf, the Kingdom also has 5-m b/d of export capacity at Yanbu on the Red Sea.

Saudi Arabia clearly has the capability to expand export volumes to meet supply disruptions, and it also has the ability to weather lower prices. Although much was made of the so-called "fiscal breakeven price of oil" – that is, the price of oil required to balance its government budget – this has been falling as Saudi oil production has soared, more than adequately offsetting increased social expenditures to assuage the citizenry in a post-Arab Spring world. The latest estimates of the Saudi fiscal breakeven price lies in the \$70s, with the IIF pegging it at \$77/bbl and the IMF at \$72/bbl. Unsurprisingly, this has corresponded with an improvement in the fiscal health of the Saudi economy, with GDP growth expected at 6.1% in 2012, with the current account surplus at 21% of GDP and a fiscal surplus of 15% of GDP.

Figure 19. Saudi spare capacity and Brent crude oil prices



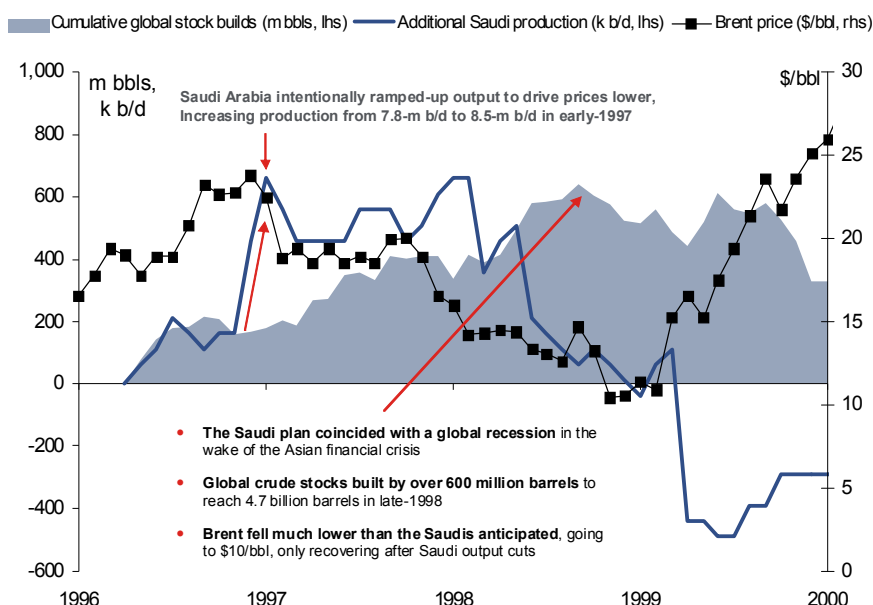
Source: EIG, Citi Research

Saudi Arabia has the motivation as well as the capability to keep prices depressed

Not only that, the Kingdom has the motivation to keep prices depressed. With no lessening desire to maintain pressure on Iran – and also Russia in its support for Syria – Saudi Arabia has justification enough to keep the world well supplied with oil. With fiscal breakeven oil prices of \$117 for both Iran and Russia, the Saudis' oft-repeated – but in our view, one should not read too much into this price level – preferred price level of \$100 would apply significant pressure to the two countries.

In fact, current Saudi "overproduction" coinciding with a time of global economic weakness is reminiscent of the 1997-1999 period, when Saudi Arabia intentionally ramped-up production to push prices down to punish Venezuela, with the Kingdom increasing its production levels from 7.8-m b/d to 8.5-m b/d in early-1997, and holding at these levels until early-1998. Given weak demand accompanying the Asian financial crisis, global crude inventories built by over 600-m bbls from 1997 to late-1998, pressuring prices from a \$27/bbl peak in early-1997 down to \$10 levels by late-1998 (Figure 20).

Figure 20. Saudi "overproduction" could overshoot to the downside



Source: EIG, Citi Research

New safety valve: the Strait of Hormuz pipeline bypass

Since last year, the magnitude of pipeline capacity that bypasses the Strait of Hormuz has increased by perhaps 5-m b/d

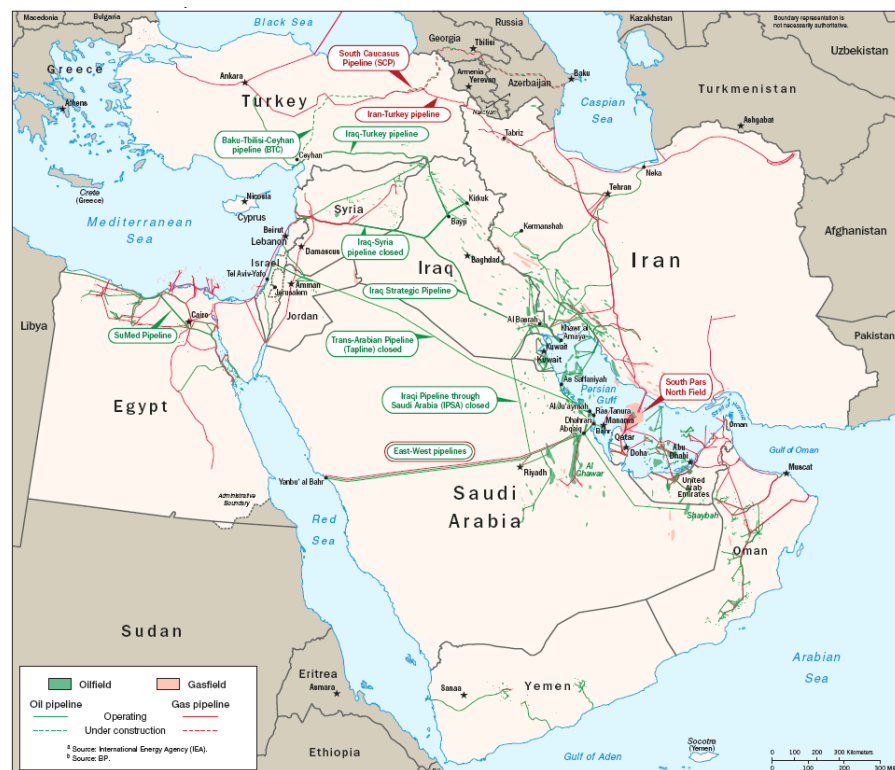
Concerns about blockages of oil flows via the Strait of Hormuz have been alleviated since last winter by critical new pipelines bypassing the Strait, which reduce the concerns over its 17 million b/d of oil flows being disrupted. There now looks to be greater pipeline capacity available to bypass the Strait. Saudi efforts to add diluent to the main East-West oil pipeline and to convert the East-West gas pipeline to oil has brought its East-West Petrolina pipeline system from some 2-m b/d to 5.5-m b/d.

And the UAE has also opened its Habshan-Fujairah pipeline, the Abu Dhabi Crude Oil Pipeline (ADCOP), allowing another 1.5-m b/d (eventually) to bypass the Strait and reach the port of Fujairah on the Gulf of Oman (see Figure 21). A first shipment of 500-k bbls was piped via the ADCOP to Fujairah, then shipped by tanker to Pakistan. However, reports suggest that the UAE is not yet able to utilize the full 1.5-m b/d of capacity.

There have also been reports – largely unsubstantiated – of the resurrection of an old Iraqi pipeline, the 1.65-m b/d Iraqi Pipeline through Saudi Arabia (IPSA), which was mothballed and could be returned to service for crude. Other pipeline options remain out of use and would require significant work to bring them back into service,

including the Trans-Arabian Pipeline (or TAPLINE), running from Qaisumah, Saudi Arabia, to Sidon, Lebanon.

Figure 21. Regional map of the Middle East and selected oil and gas pipeline infrastructure



Source: EIA

SPR release capacity

The US holds the majority of the IEA's strategic reserves, available to relieve supply disruptions in emergencies

As of June 2012, the IEA member countries held over 1.5 billion barrels of petroleum inventories worldwide for strategic reasons, with 1.28 billion in crude and 256 million in refined products (Figure 22). (Most product stocks are held by participating companies and roll over with volumes continuously entering and exiting, given that refined petroleum has a relatively short shelf life, while crude oil stores well.) The US holds the lion's share, at 696-m bbls, down from 727-m bbls last June, prior to the SPR release in response to the Libyan disruption. The US SPR is intended as an emergency response tool that the President can use in the event of a "severe energy supply disruption" to the US.

The US SPR has seen three Presidentially-directed releases – during Operation Desert Storm in 1991, after the devastating hurricane seasons of 2005 following Hurricanes Katrina and Rita, and following the Libyan civil conflict in 2011. There was also a politically sensitive exchange of SPR crude ordered by President Clinton in September 2000, during the Gore vs. Bush Presidential campaign, in response to low distillate inventories in the Northeast.

Figure 22. OECD government stocks of crude and products (m bbls)

	RECENT MONTHLY STOCKS					PRIOR YEARS' STOCKS		
	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jun-09	Jun-10	Jun-11
OECD Americas								
Crude	696.0	696.0	696.0	696.0	696.0	724.1	726.6	726.5
Products	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0
OECD Europe								
Crude	188.2	189.1	189.7	188.7	191.0	186.7	185.4	184.9
Products	235.0	234.7	234.3	235.2	234.8	241.9	239.5	241.1
OECD Asia Oceania								
Crude	393.6	393.6	393.5	393.5	393.5	389.1	390.9	391.1
Products	19.7	20.0	20.0	20.0	20.0	19.2	20.0	20.0
Total OECD								
Crude	1277.7	1278.6	1279.1	1278.1	1280.4	1299.9	1302.9	1302.5
Products	255.7	255.7	255.3	256.2	255.8	263.1	261.5	261.2
Total	1534.9	1535.8	1535.7	1535.6	1537.4	1564.6	1565.7	1565.0

Source: IEA

SPR releases have been politically sensitive in the past, with the 2000 SPR exchange during the Gore vs. Bush Presidential campaign as an example

This 2000 exchange saw 30-m bbls of crude released in October, initially to be repaid by late 2001 but actually turned out to be not fully returned until early 2004. With "interest", the volume of oil returned was 34.5-m bbls. It was criticized as politically motivated given the upcoming Gore vs. Bush elections that year, while the effectiveness of a crude oil release to address a heating oil shortage was also in question – only a portion of the crude would be eventually converted into heating oil, while at the time, refineries were already operating at high utilization rates, processing close to as much crude as they could take; US refineries were running at 94% and 92% in September and October 2000 respectively, and US Gulf Coast refineries were running at 96% and 95% respectively. With gasoline prices currently high, and gasoil looking tight again going into 4Q'12, such politically motivated criticism – that an SPR release could be motivated by the desire to ease fuel prices ahead of an election – is in the air, but there are other clearly geopolitical and weather-related supply disruptions that provide political cover and justification for a release.

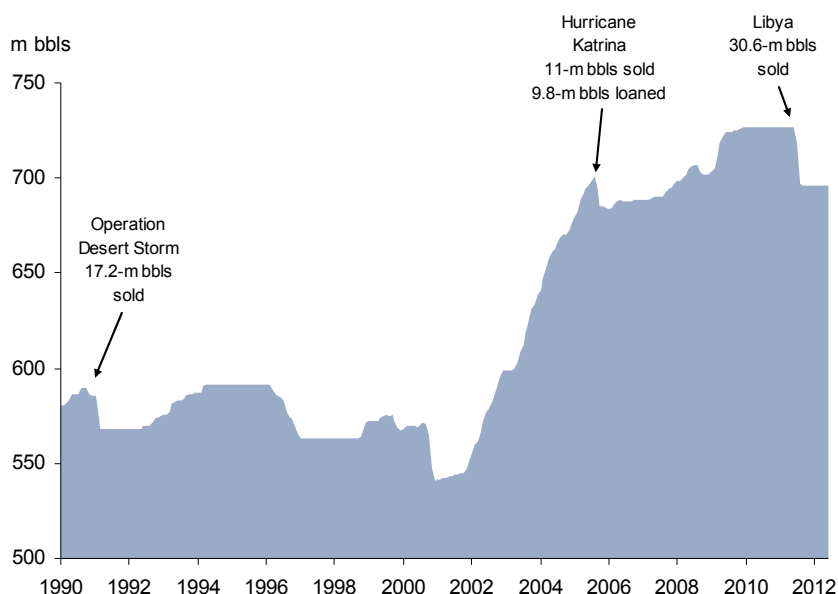
There have been three Presidentially-directed SPR releases – Operation Desert Storm...

Of the Presidentially-directed SPR releases – not including the Exchange 2000 – the first was on the eve of Operation Desert Storm in January 1991, when President Bush announced a release of SPR stocks as part of a general IEA declared emergency and alongside the commencement of allied attacks on Iraq. 33.75-m bbls of SPR stocks were prepared for sale, with 17.2-m bbls ultimately sold. This was released through to April, with the peak of release rate at 545-k b/d over the week ending March 8, 1991. By the end of February, Saddam Hussein's forces had retreated and after a ceasefire, the first Gulf War ended on March 3. WTI prices had surged from \$15-20 levels in the first half of 1990 to a peak of \$40 in the fourth quarter as Iraqi oil production plummeted from 3-m b/d levels, before dropping back to \$25 levels in December as Saudi Arabia and Venezuela filled the gap, the Saudis ramping up output from 5.5-m b/d levels to over 8-m b/d by end-1990. The declaration of war on January 16 was accompanied by a spike to ~\$32 but the reassurance of the SPR release helped further ease prices down below \$20 levels, which remained fairly stable until the war ended.

...a second release in response to
Hurricane Katrina...

The second release came in response to Hurricane Katrina, which caused widespread destruction to homes and livelihoods in late-August 2005, and did not spare oil infrastructure either. All Gulf of Mexico production was shut-in, while refineries, pipelines and terminals were heavily damaged, causing a price spike in gasoline and products – Gulf Coast 87-octane gasoline spiked from sub-\$2/gallon to over \$3/gallon in late-August 2005. A coordinated IEA strategic release of 60-m bbls was decided upon and implemented, including a US SPR sale of 30-m bbls, half sweet and half sour. Seven companies made 14 offers totaling 19.2-m bbls, with 14.8-m bbls of sweet and 4.4-m bbls of sour; after the DOE assessed these offers, 10.8-m bbls were awarded, with 10.8-m bbls of sweet and 200-k bbls sour. The release began on September 26, 2005. Combined with emergency loans of 9.8-m bbls, the total released in the short-term was 20.8-m bbls, although the loans were later returned. The drawdown rate ran as high as 390-k b/d in early October.

Figure 23. US Strategic Petroleum Reserve stock levels and Presidentially-directed releases

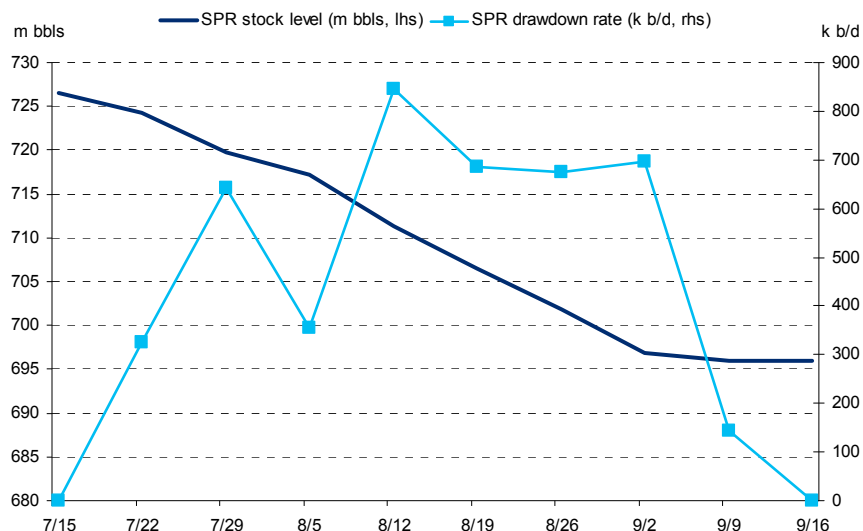


Source: EIA, Citi Research

...and last year, in the wake of the Libyan
disruption

The third time the SPR was used in a Presidentially-directed emergency release was last summer as the Libyan civil conflict raged on. It too was coordinated with other IEA members. Although producing a seemingly small 1.7-m b/d – around 2% of global oil production – its impact was particularly acute because it represented ~14% of global light, sweet crude, which yield more high-value refined products like gasoline and diesel. [Libyan Oil and Gas – A Primer](#) In response to this supply disruption, which helped push prices to over \$125 in 2Q'11 from \$70-80 levels in 2H'10, the IEA member countries issued a coordinated release of 60-m bbls, with the US contribution at 30-m bbls. The US Notice of Sale was issued on June 24, 2011, for delivery by end-August. EIA data show SPR stocks drawing down from late-July to the first week of September, or over two months, despite the sale completed by mid-July. The fastest rate of drawdown was seen in the week ending August 12, 2011, at 845-k b/d, with subsequent weeks at almost 700-k b/d (Figure 24).

Figure 24. US SPR stock level and drawdown rate, July-Sept 2011



Source: EIA, Citi Research

Among the wider IEA release, Europe released 4.2-m bbls of crude and 15-m bbls of products among both government and industry stocks, while Asian countries released 6-m bbls of crude and 5.4-m bbls of products (see Figure 25).

Figure 25. Breakdown of the 2011 IEA strategic stock release after the Libyan disruption*

m bbls	Government	Industry	Total
US	30.0	0.0	30.0 (crude only)
Europe	5.5	13.8	19.2 (of which 4.2 crude)
Asia	3.5	7.9	11.4 (of which 6.0 crude)
Total	38.9	21.7	60.6 (40.1 crude)

Source: EIG, Citi Research *Numbers may not add-up due to independent rounding

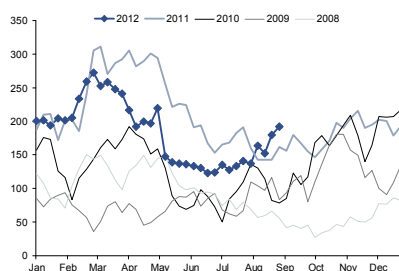
The US SPR claims to be able to release crude stocks at a theoretical rate of 4.25-m b/d, but is likely to be far lower given congestion and logistics.

The US SPR claims to be able to release crude stocks at a theoretical rate of 4.25-m b/d, but is likely to be far lower given congestion and logistics. Given the crude glut in the US midcontinent and fast-growing local Texas production, oil does not need to be piped inland from the Gulf Coast, and crude imports have also been gradually pushed out. [End Game](#) for the origin and evolution of the crude glut in the North American midcontinent.) Since the SPR sits in a well supplied region; it would need to rely on waterborne transport options, which would already face congestion from existing port activity. The actual drawdown rate was observed at 845-k b/d at the most last year.

To be sure, in the eventuality of an emergency in which US imports were severely disrupted a significant release could be made from strategic storage on the US Gulf Coast. But practically no oil can be delivered inland due to the growth of US oil production capacity, and any released oil would largely service waterborne refinery markets. Thus it is plausible that 2-m b/d could be released from the US strategic petroleum reserves and another 2-m b/d from other IEA countries in the eventuality of a severe emergency such as a closure of the Strait of Hormuz.

How effective would an SPR release be this time around? This issue has become highly controversial. In the wake of the Libyan conflict, the SPR release did little to ease prices beyond an initial period of time when LLS moved into discount to Brent

Figure 26. Managed money net length in NYMEX WTI futures and options – higher risk appetite?



Source: CFTC, Citi Research

An SPR release may be more effective right now given the seasonal easing of crude markets as global refinery runs move back into the Fall trough, while prices could ease significantly if market length is shaken out

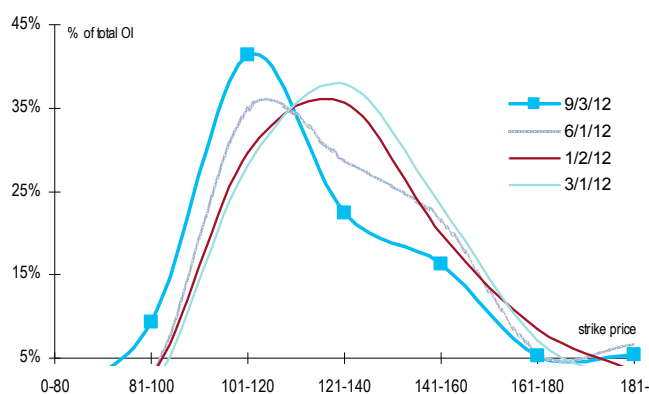
but with Brent remaining stubbornly at \$110-120 levels through the summer of 2011. Its impact was mostly felt in local Gulf Coast light sweet prices (Louisiana Light Sweet, or LLS), which fell to a discount to Brent of as much as \$5/bbl at times, from typical levels – at that time, at least – of a \$4-5/bbl *premium* to Brent. (Going forward, given rising North American crude supply, LLS looks to move to a structural discount to Brent.)

On the other hand, there were a number of moving parts and the release took place just as major supply disruptions took place involving largely Brent-related crude streams. Urals production fell significantly last summer due to pipeline reconstruction and surging Russian demand; Azerbaijan production fell by over 100-k b/d due to the shutting in of a production platform in the Caspian for long-term maintenance; Kazakh production flows fell more than 100-k b/d due to labor strikes. And on top of this, severe production problems in the North Sea reduced other flows. Add in trucker strikes in Colombia, extreme maintenance in the US Gulf of Mexico and production problems in Colombia and there was a 1-m b/d supply problem in total. Undoubtedly prices would have risen significantly without the SPR release, but with these other problems prices remained stubbornly high and Brent time spreads blew out progressively from about 50 cents per barrel to well above \$2/bbl by October.

But an SPR release may be more effective right now, given that the market is less tight than it was last summer, and seasonality works to the advantage of policymakers, with refineries worldwide winding down and moving back into maintenance in the Fall, and thus easing crude demand by some 2- to 3-m b/d on a seasonal basis from the August peak.

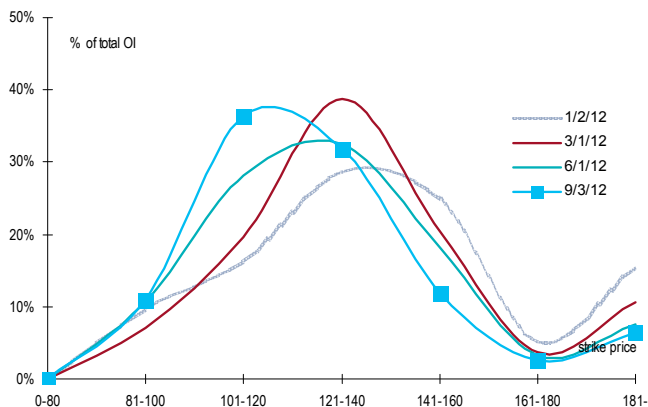
A key rationale for a release is to introduce two-way geopolitical risk, rather than just to the upside – as geopolitics and macro, in the form of hopes for QE3, are skewed towards. And oil markets are quite long, with substantial length accumulated at current levels; shaking out that length could mean a larger price impact given the fundamentals impact – and catalyzing effect – of an SPR release. Managed money net length in NYMEX WTI has been climbing since early-July after bottoming out after the May sell-off across asset classes (Figure 26). However, Brent December 2012 and December 2013 options are concentrated in relatively lower strike prices (particularly in the \$101-120) range than earlier this year, when distribution of open interest was more concentrated in the \$121-140 range or higher (Figure 27 and 28).

Figure 27. Brent Dec-12 options positioning (% distribution of open interest across strike prices) shows increased risk aversion



Source: Bloomberg, Citi Research

Figure 28. Brent Dec-13 options positioning (% distribution of open interest across strike prices) shows increased risk aversion



Source: Bloomberg, Citi Research

A combination of an IEA release double the size of last year's and a drawdown of Saudi and other producer stocks could cover a 150-m bbl disruption – just about enough for a two-week disruption of the Strait of Hormuz, but clearly any failure of any individual component could mean significant shortfalls and significantly higher prices

The G-7 nations are contemplating a strategic reserve release some time soon, in response to current conditions. No doubt this would serve to moderate prices into the fall, especially if there was no contemplation of replenishment of any US reserves that might be released. The rationale for that would be that reduced US consumption requires significantly less strategic stockpiling than what is currently held in the SPR.

An early release would not impede another release in the eventuality of a closure of the Strait of Hormuz or some other disruption in case of a military event in the Persian Gulf. But the calculation there would be significantly less significant today than it would have been a year ago. Whereas a year ago some 17-m b/d of oil flows might have been at stake, today this is closer to 10-m b/d given the pipeline connections now in place. A two-week disruption of flows would amount to some 140- to 150-m bbls. Undoubtedly a price spike would occur, but it would be attenuated in all likelihood by its short-term duration, by a drawdown of commercial inventories, and by a combination of strategic stock releases. A release double that which occurred last year by IEA countries would amount to 120-m bbls; Saudi Arabia and other producers could probably draw down 30-m bbls of stocks deployed globally. Clearly, if any of these components are smaller than they look, such a disruption could still lead to significant shortfalls and significantly higher prices. This could happen with a failure of any of the individual components – Hormuz pipeline bypass capacity, Saudi export facilities, or US SPR drawdown capabilities.

The current cushion might not be perfect in many ways. But it looks like it could cover a disruption of 150-m barrels. And without a closure of the Strait of Hormuz, substantial Saudi producer stocks on land could also be tapped into.

Appendix A-1

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