

# Oil Market Dynamics in Turbulent Times

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# Introduction

- Current events in MENA and recent oil price behaviour reignited many old debates
  - Reliability of Middle East as an oil and gas supplier
  - Role of speculators in oil price formation process
  - Effectiveness of oil markets in adjusting to disruptions
  - Players' response to disruptions and role of Saudi Arabia
- But context of debate has changed
  - Global economy still recovering from one of deepest financial crisis since post World War II period
  - Shifts in global demand dynamics and trade flows towards non-OECD
  - Concerns about peak oil and scarcity premium (IMF, 2011)
  - Sweeping changes in MENA's political landscape

# A Structural Transformation?

- Main messages
  - Current oil market disruption so far is small in terms of historical ones
  - Oil market showed great resilience in dealing with physical disruption through adjustment in price differentials
  - Price level increases reflect perception of lack of feedbacks from demand and supply and movements in price levels less important than differentials for market adjustment
  - Libyan disruptions reinforce dominant story of tight market fundamentals
  - Main concern for market is context: current events would engulf other key oil exporters, especially SA
    - But concern not new; Huntington( 1968): not whether regimes in Gulf would be toppled but “the scope of the violence of their demise and who wields the violence”
    - Current events caused market players to update probability of disruptions from region
    - Updating + actual loss of output will induce change in prices

# Structure of Presentation

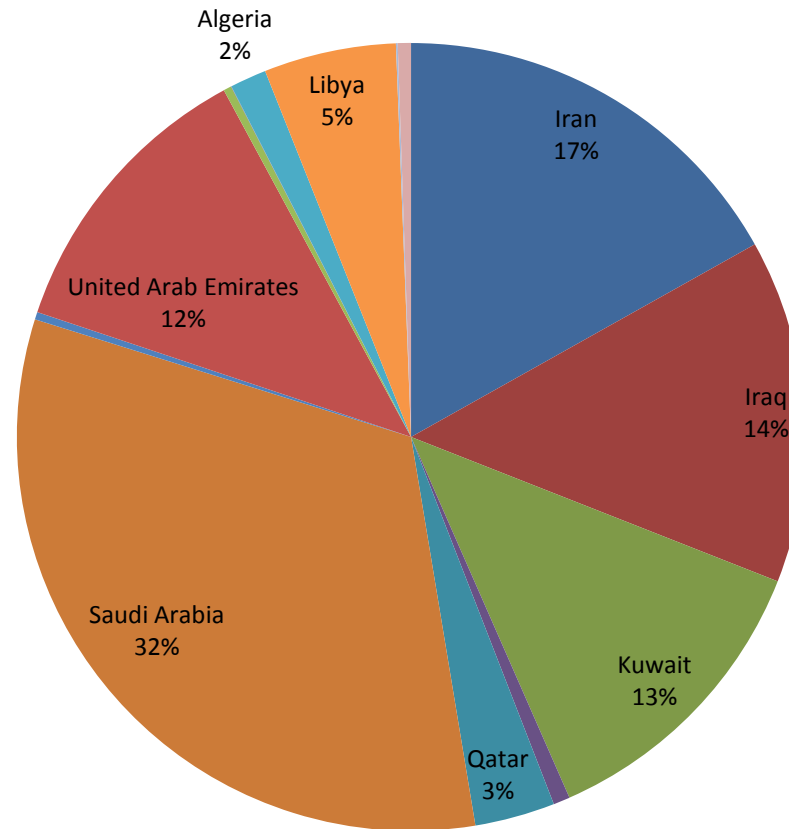
- Importance of MENA in the Global Energy Scene
  - [Oil](#)
  - [Natural Gas](#)
- [Double Dependency on oil](#)
- [Libyan Disruptions in Historical Context](#)
- [The Libyan Disruption and Oil Price Behaviour](#)
- [The Battle of the Stories](#)
- [What Factors Could Change the Current Oil Market Dynamics?](#)

# Importance of MENA in Global Oil Scene

	Level (2009)	Share of Global (2009)
<u>Proven Oil Reserves (billion of barrels)</u>	816	61%
Production (mb/d)	28.6	36%
<u>Consumption (mb/d)</u>	8.2	10%
<u>International Exports (mb/d)</u>	21.2	40%
<u>Surplus Capacity (2010)</u>	4.51	100%

# High Concentration of Reserves

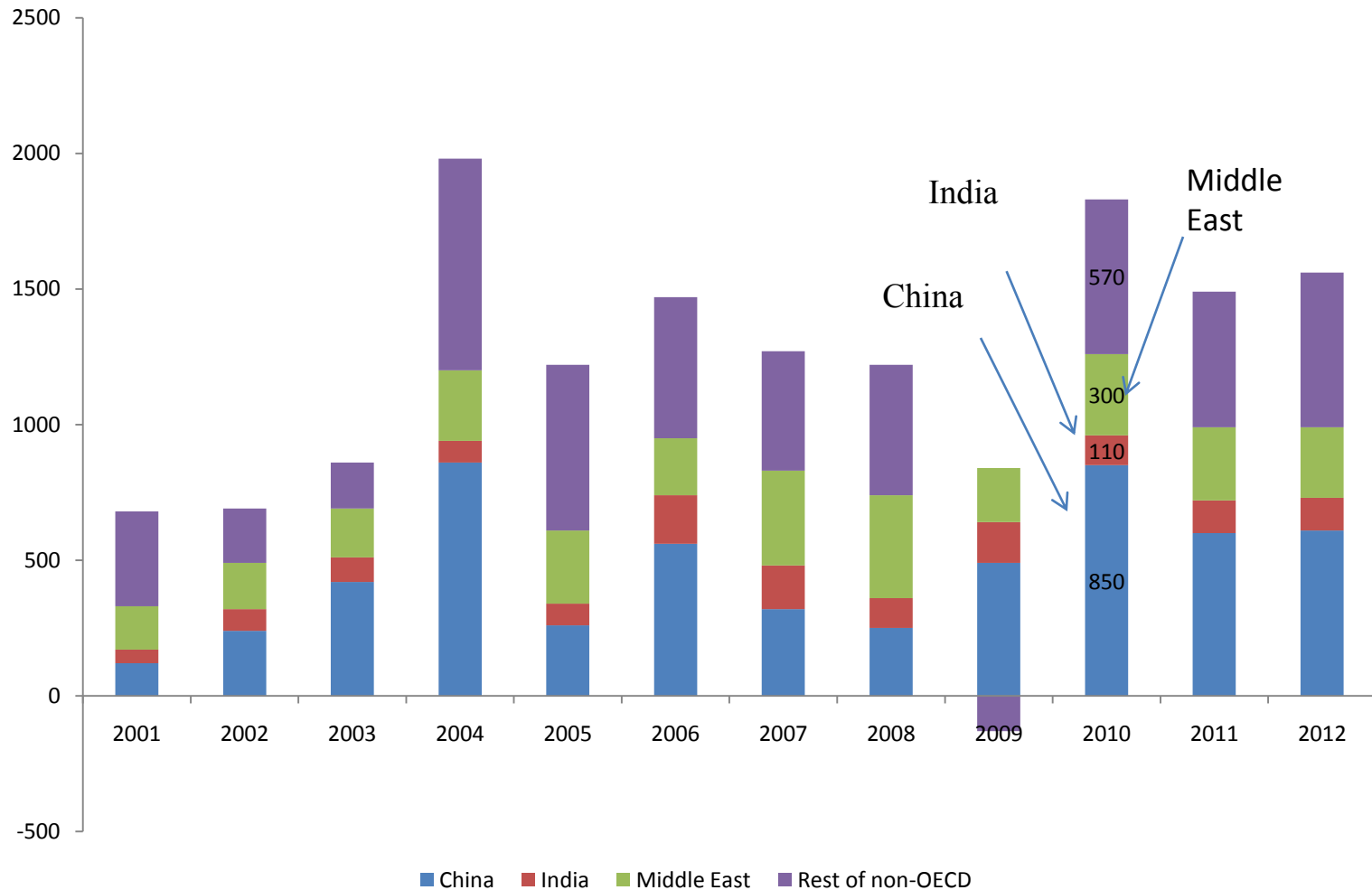
88% of MENA Proven Oil Reserves concentrated in five countries



Source: 2010 BP Statistical Review

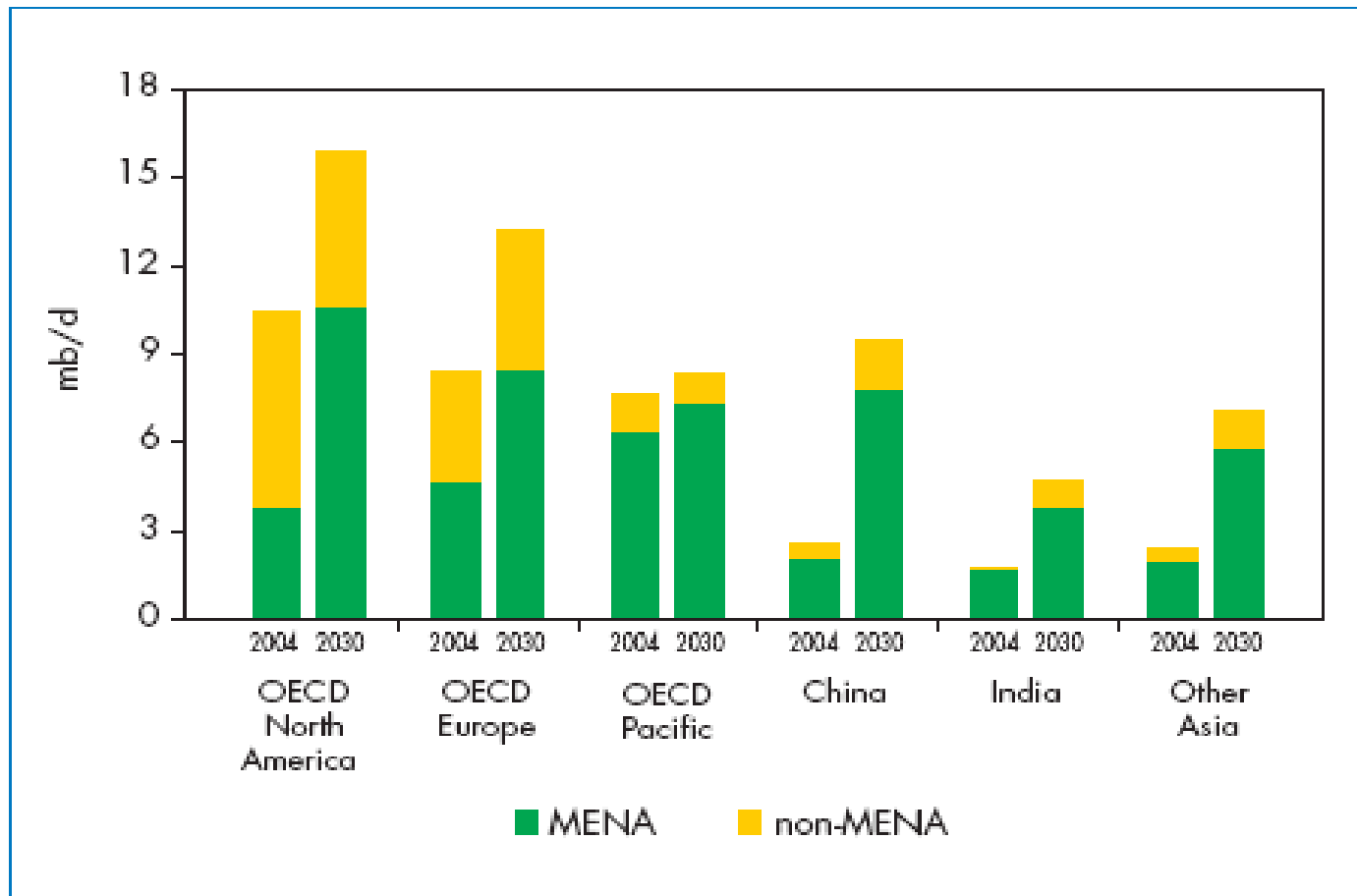
# Middle East is an Important Growth Consumption Area

## Annual Change in Oil Demand in China, India and Middle East (tbd)



# Strong Position in International Trade

*Figure 4.19: Oil Exports to Net Importing Regions from MENA and Non-MENA Countries in the Reference Scenario*

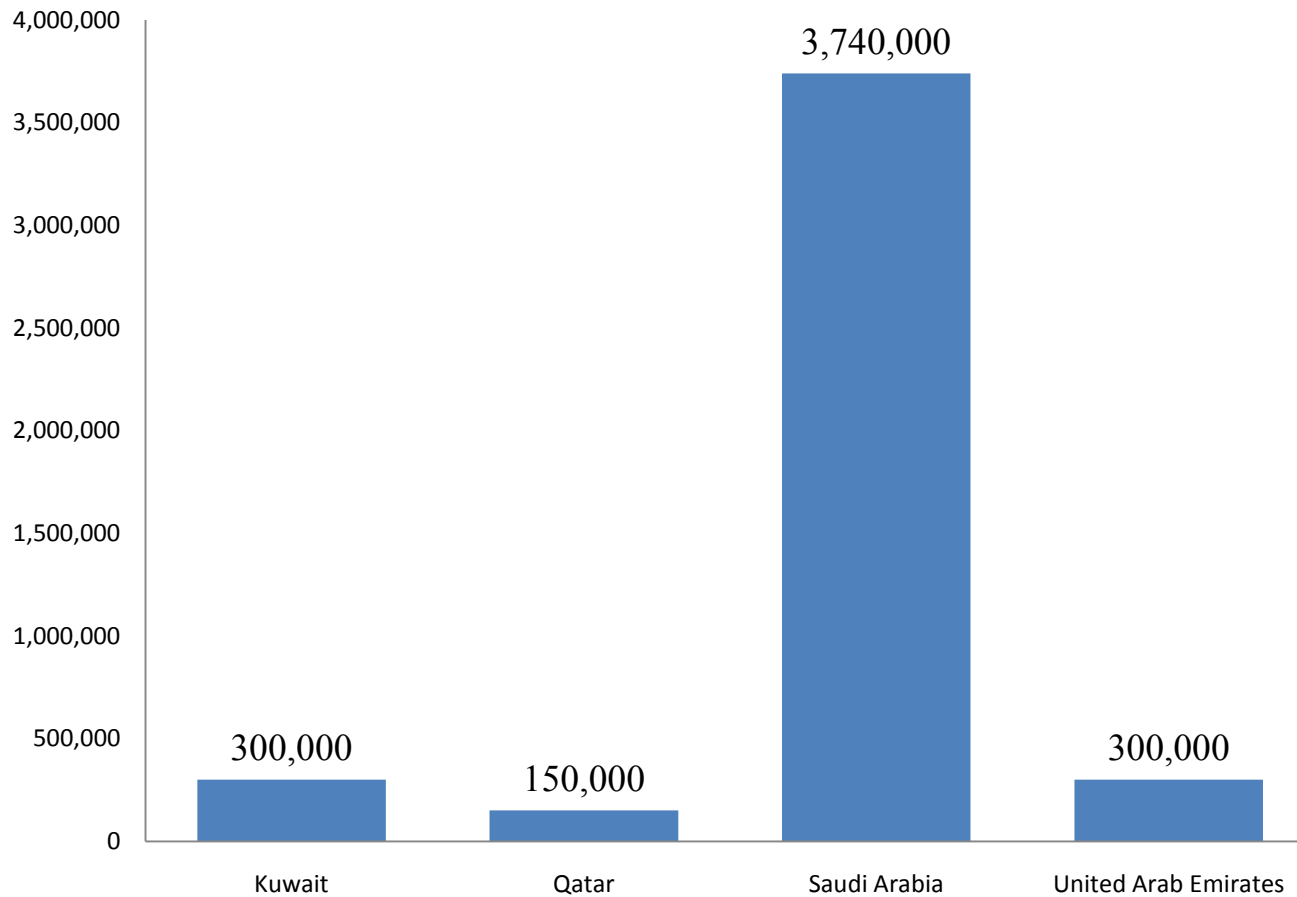


Source: IEA



# Spare Capacity Holder

OPEC Spare Crude Oil Production Capacity b/d, 2010



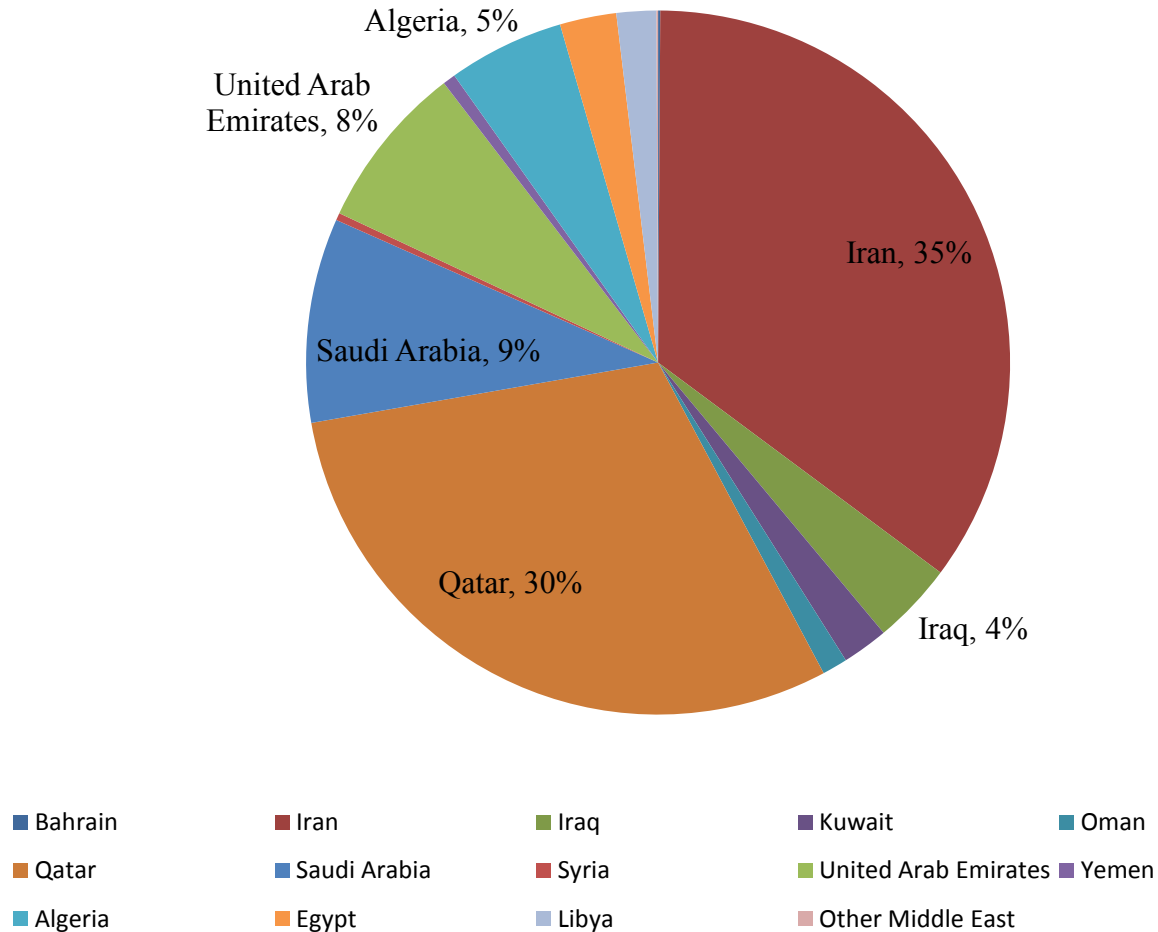
Source: EIA Website

# MENA Gas Does Not Have Same Geopolitical Relevance as MENA Oil

	Level (2009)	Share in Global
<u>Proved Reserves (tcm)</u>	84.4	45%
<b>Marketed Production (bcm)</b>	591.5	19.8%
<u>Consumption (bcm)</u>	415	14%
<b>Total Pipeline Imports (bcm)</b>	32.2	5%
<b>Total LNG Imports (bcm)</b>	0.9	0.4%
<u>Total Pipeline Exports (bcm)</u>	70.9	11%
<u>Total LNG Exports (bcm)</u>	102.8	42.4%

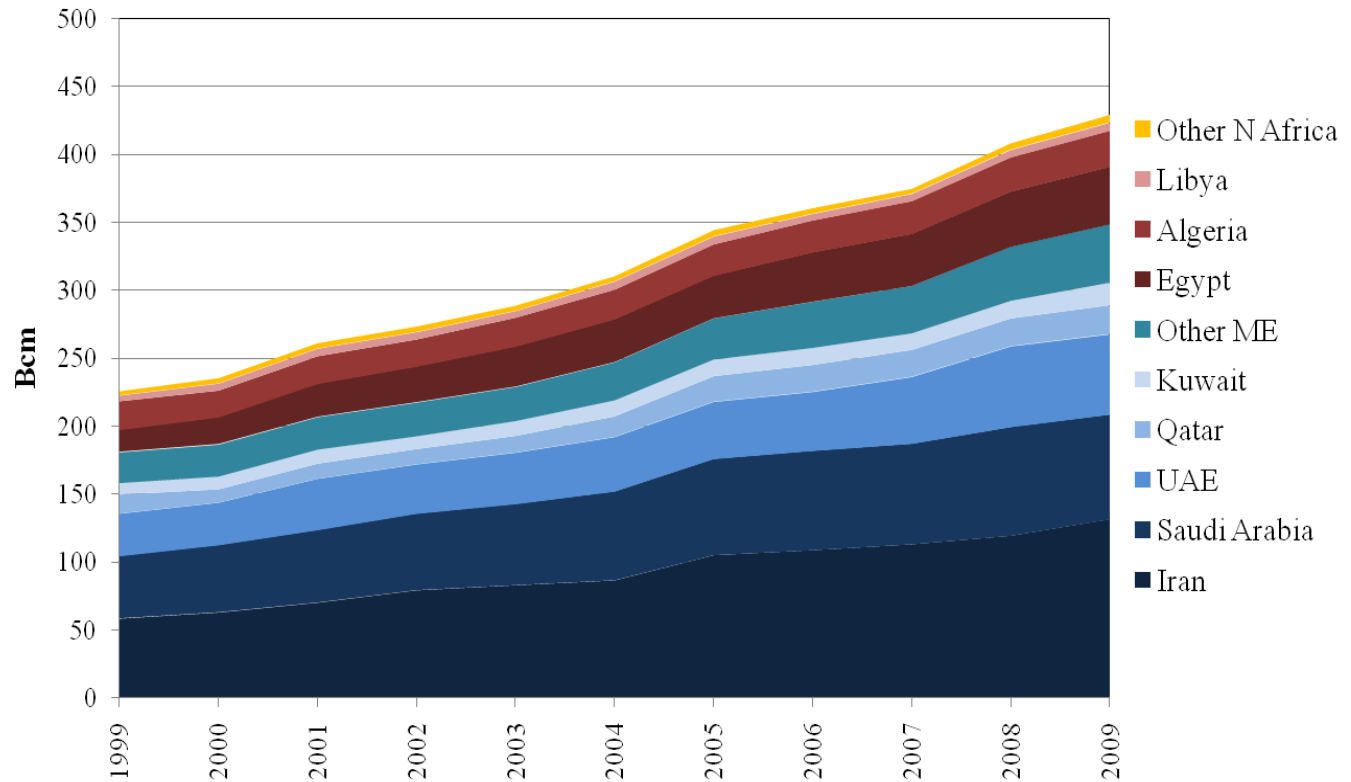
# Distribution of Reserves Uneven

65% of the region's proven gas reserves in Iran and Qatar



# Rapid Growth in Natural Gas Consumption

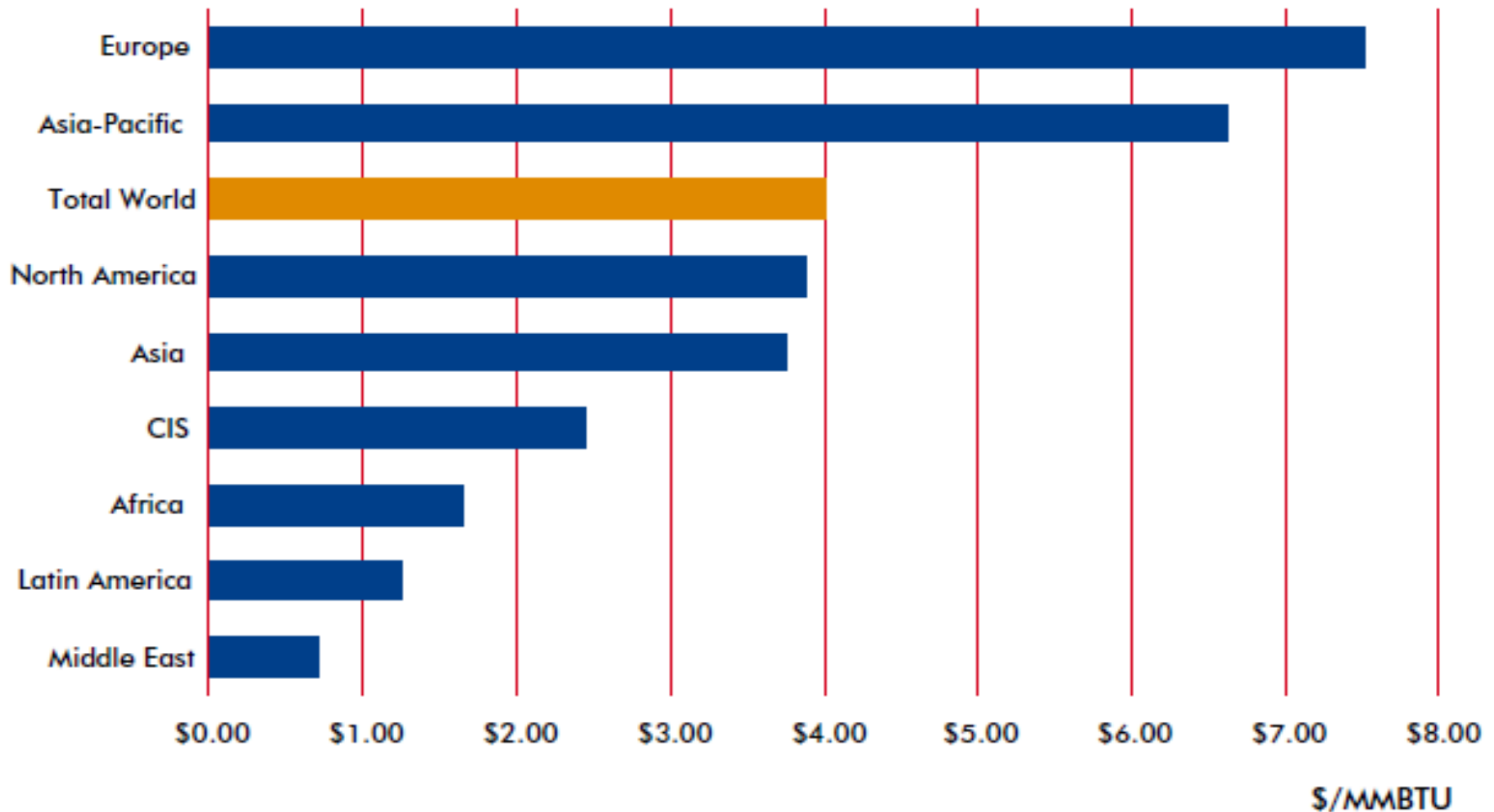
MENA gas consumption, 1999-2009



Sources: BP and Cedigaz

Source: Cedigaz

# Average Wholesale Gas Prices by Region, 2009



Source: Mike Fulwood, 2009 IGU Survey of Wholesale Gas Prices

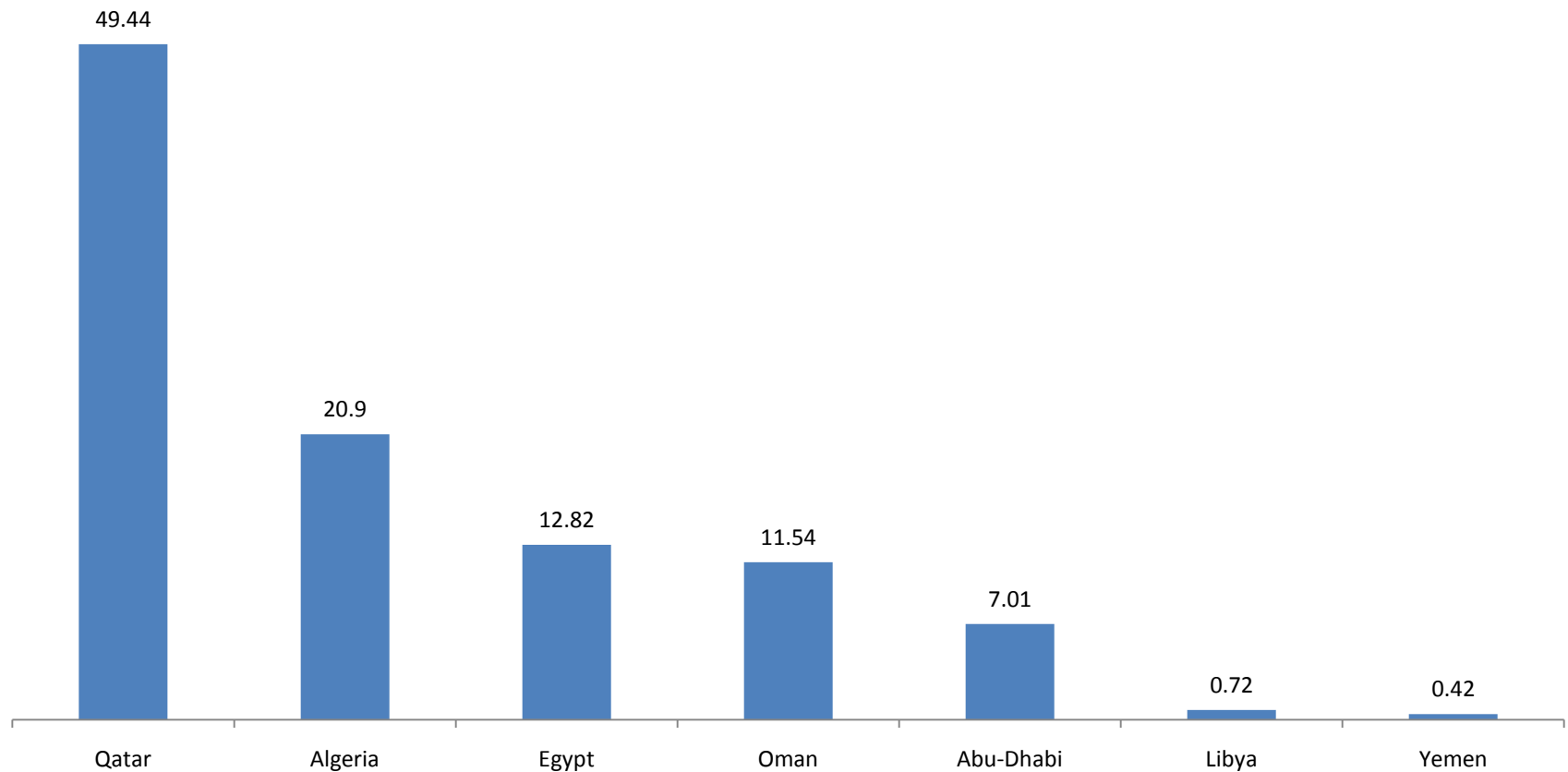
**Middle East region has the lowest domestic gas prices in the world**

## 2009 Pipeline Exports: 71 Bcm

	Exports (bcm)	Destination
Iran	5.67	Azarbaijan (0.42), Turkey (5.25)
Algeria	31.77	Italy (21.37), Spain (6.94), Other
Qatar	18.75	UAE (17.25), Oman (1.5)
Libya	9.17	Italy (9.17)
Egypt	5.5	Jordan (2.85), Israel (1,70), Syria (0.91), Lebanon (0.04)

# Large Share in LNG Trade Thanks to Qatar

2009 LNG Exports, 102.8 bcm



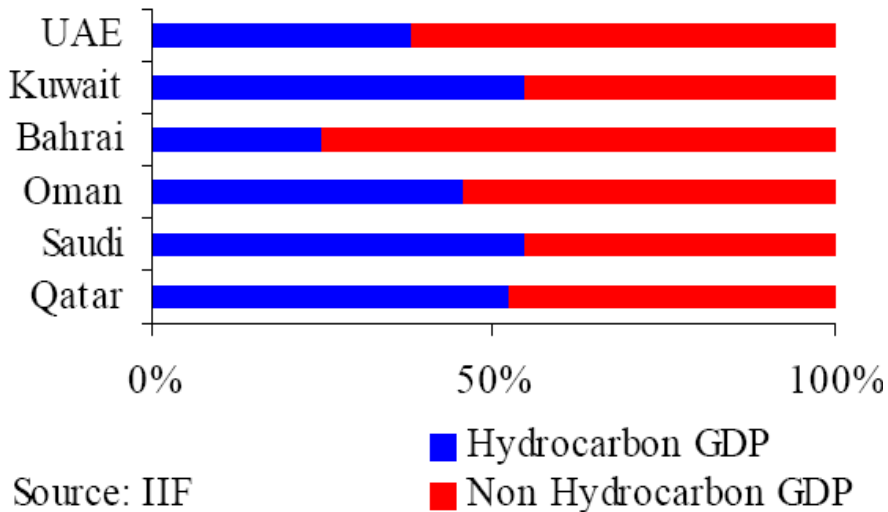
# Dependency on Middle East Oil

- High dependency on MENA oil roots of energy security concerns and key driver of foreign and energy policy in consuming countries
- List of potential causes for concern quite long
  - Region experienced relatively large number of disruptions in past
  - ME Oil exporters could be hit by international/regional wars
  - Oil exporting countries may witness long periods of instability/civil conflicts and cripple oil industry
  - Terrorists networks succeed in hitting key oil installations/transport lines
  - ME countries could be tempted to use oil weapon & restrict trade routes
  - West often reacts to political developments in ME by imposing sanctions on oil exporters
- But it has not been all bad news
  - MENA continues to act as main supplier of oil and gas to global markets
  - Region played role of swing producer absorbing big supply shocks (Iran-Iraq War, Iraq Invasion of Kuwait, US invasion of Iraq, Venezuela strike, Nigeria unrest)

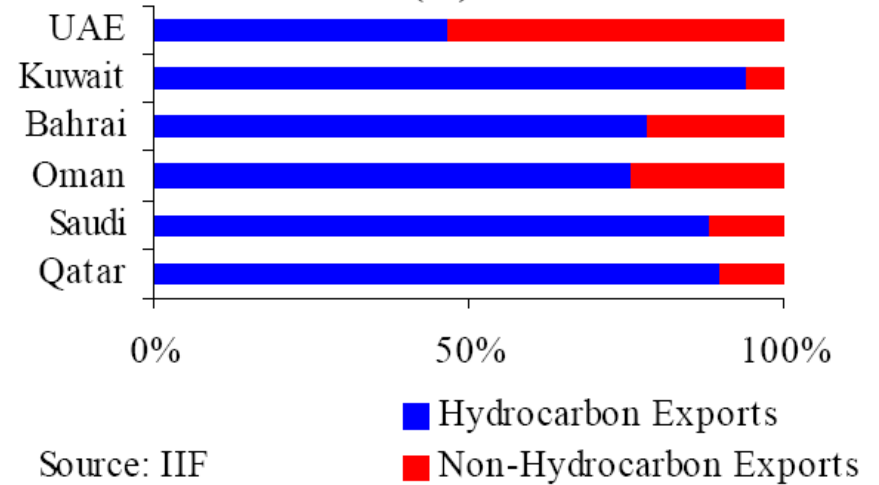


# Two-Way Oil Dependency

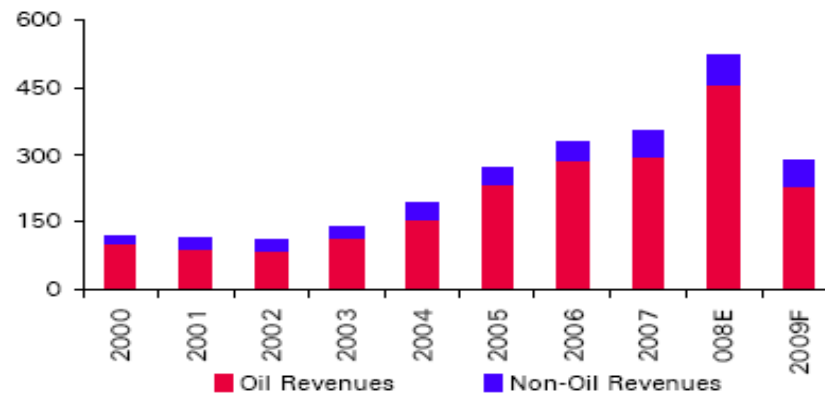
**GCC: Sectoral Shares in 2007**  
Nominal GDP (%)



**GCC: Composition of Exports, 2007**  
(%)



**GCC: composition of government's revenues**  
(\$ billion), 2000-2009



Source: official sources and NBK estimates and forecasts.

# MENA Disruptions in Historical Perspectives

## Significant Middle East and North African Oil Crises, 1950-2011

Event	Date	Gross Loss (million barrels)
Iranian Nationalisation	03/1951–10/1954	924
Suez Crisis	11/1956–03/1957	240
Syrian transit fee dispute	12/1966–03/1967	63
Six Day War	06/1967–08/1967	120
Libyan price controversy; damage to tapline	05/1970–01/1971	351
Algerian–French nationalization	04/1971–08/1971	90
October Arab–Israeli War; Arab oil embargo	10/1973–03/1974	468
Iranian Revolution	11/1978–04/1979	630
Outbreak of Iran–Iraq war	10/1980–12/1980	297
Gulf Crisis	1990–1991	420
US Invasion of Iraq	03/2003–06/2008	1150
Libyan Disruption	03/2011-continuing	99

# Disruptions are Different

- Impact of disruptions on oil market dynamics depends on
  - Causes of disruption
    - Technical failures; weather related events (hurricanes, storms); terrorist attacks on oil installations; war and civil strife; regime change; sanctions
    - Disruption occur at any part of supply chain & not only at wellhead
      - Unrest in Egypt caused concerns about oil traffic through the Suez Canal and the SUMED pipeline
      - Continuing unrest in Yemen might raise concerns about disruption in Strait of Aden
      - Tension between GCC and Iran raises concerns about disruption in Strait of Hormuz
    - Change in exporters' oil policy to balance markets results in larger withdraws oil from market
  - The nature of disruption
    - Crude oil versus products; long haul versus short haul; crude oil quality issues; etc...
  - Length of disruption
  - Oil market conditions at the time
    - Tight market conditions vs available surplus capacity

# The Impact is not Uniform

- Disruptions do not have uniform impact on oil market dynamics and prices
- Also important to distinguish between
  - Short-term effects (the immediate output loss and its impact on price behaviour)
  - Long-term effects (productive capacity and long-term supply potential)

# Impact of Disruption Not Uniform

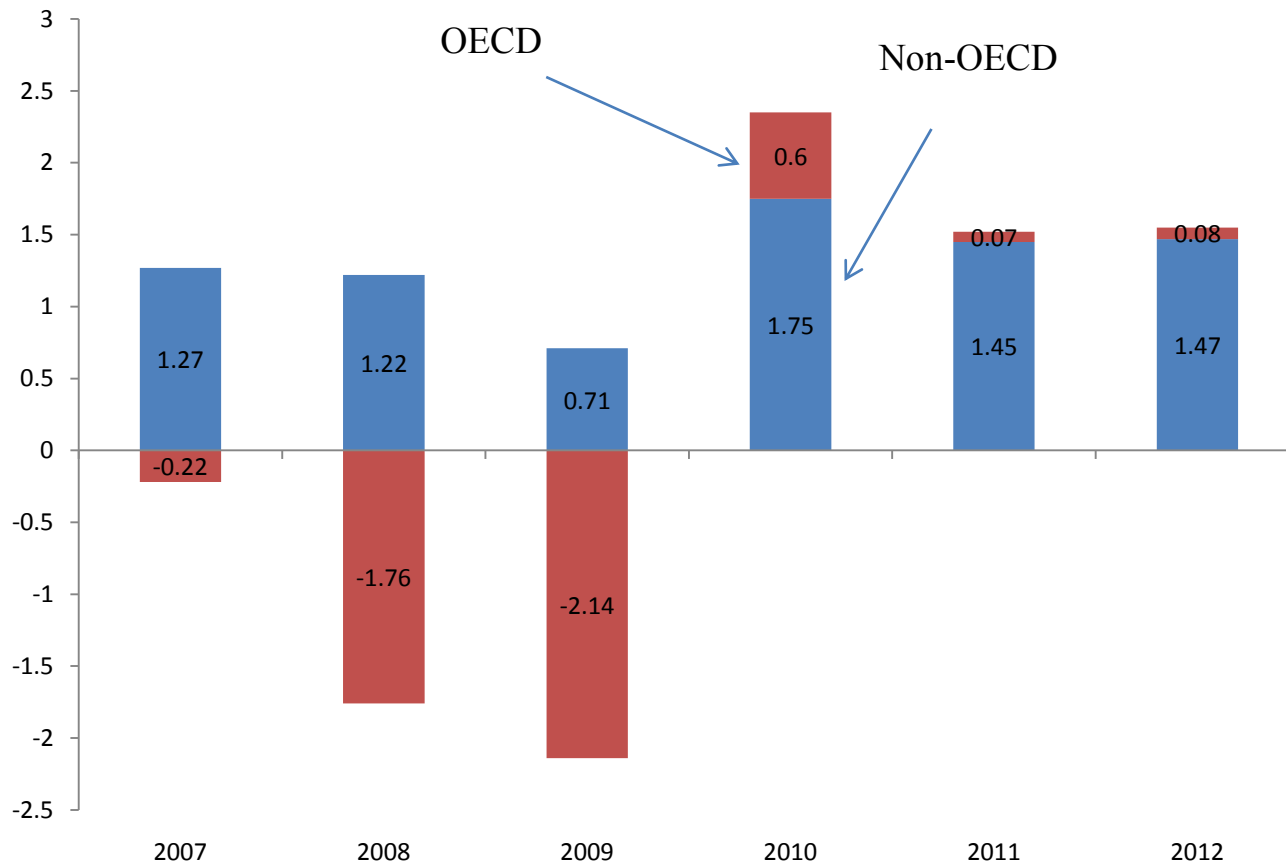
Event	Impact on Immediate Supplies	Impact on Productive Capacity
Wars and Civil Conflicts	High	High
Regime Change and Revolution	High	High
Successful Terrorist Attacks on Oil Installations	Very Low	Very Low
Closure of Trade Routes	High	Low
Unilateral Sanctions	Low	High
Producer Oil Policy	High	Low

# The Libyan Disruption: More than one Dimension

- The context of the disruption
  - Largest holder of proven reserves in Africa
  - [Robust growth in oil demand](#)
  - [But considerable spare capacity and inventories](#)
- The crude oil volume effect
  - Loss of 1.6 million b/d of crude oil
  - [Compensated by increase in OPEC production??](#)
- [The product volume effect](#)
  - Loss of 136,000 b/d of refined products (gasoline, jet fuel and feedstock naphtha)
  - Crude oil exported to Italy, refined for re-exports increasing loss of refined products
- The quality effect
  - Libya's crude oil is light, sweet quality
  - Es Sider: slightly lower gravity than Brent and WTI but a slightly lower sulfur content;
  - Sirtica: lighter than Brent and WTI
  - Most of spare crude production capacity is heavy sour end of the barrel
- The short-haul effect
  - The closer the country is to market outlet the more immediate the disruption's impact on oil inventories and prices
- [The location effect](#)
  - Buyers will need to find substitute supplies for the disrupted oil
  - Diversion of trade flows impose costs

# Robust Demand Growth Driven by Non-OECD

Year-on-Year Change in Liquid Fuels Consumption (mb/d)

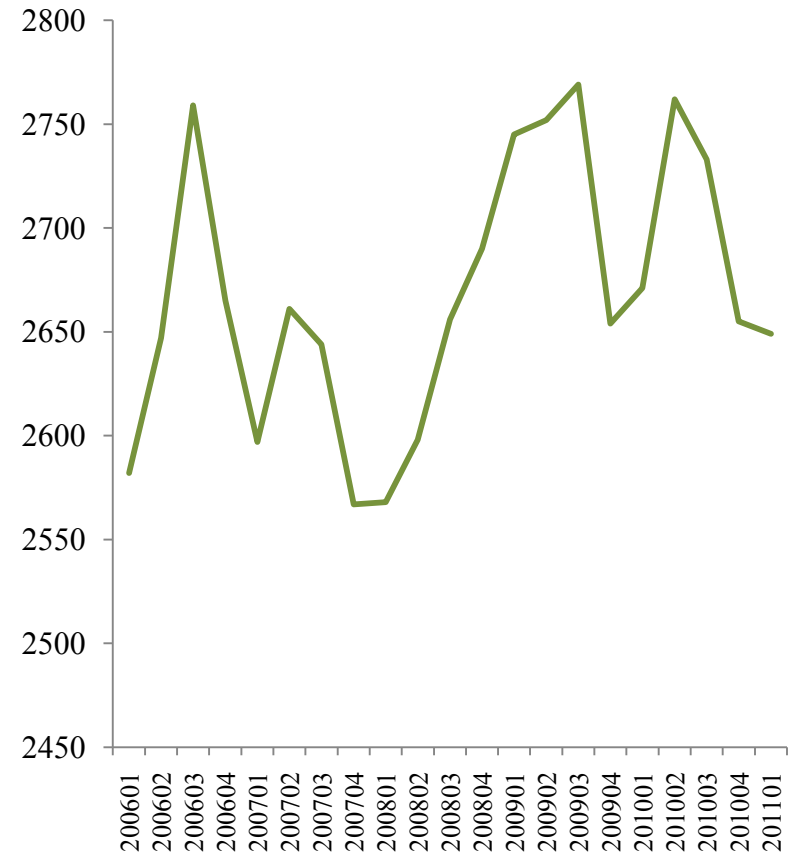
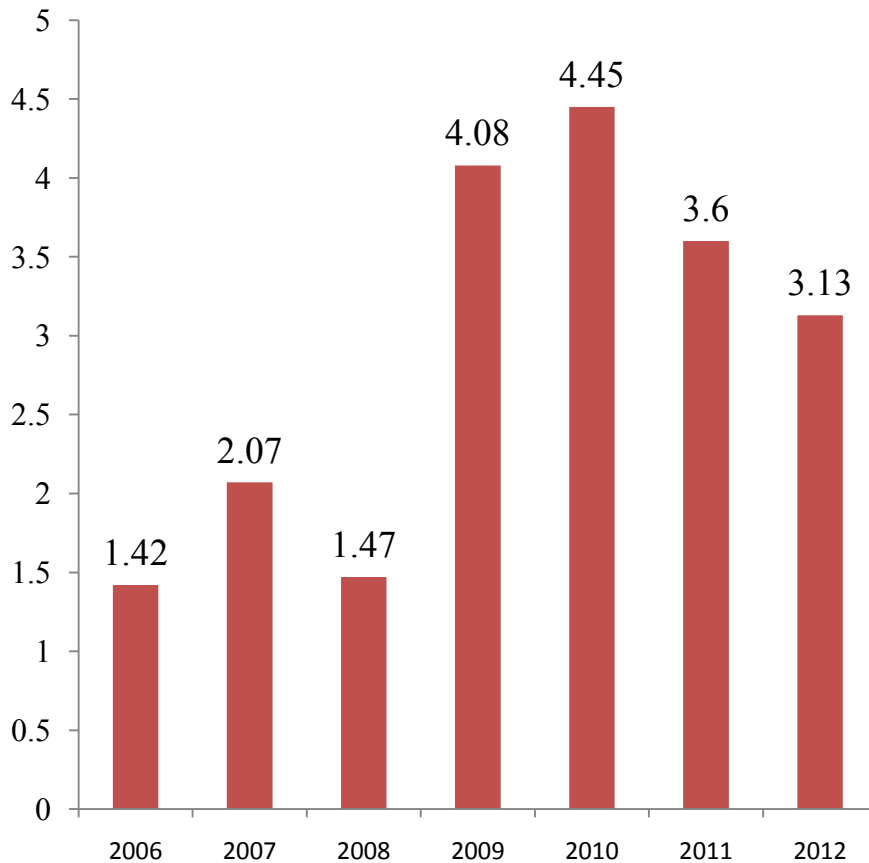


Source: EIA Website

# Spare Capacity and Crude Inventories Relatively High

OPEC Total Spare Crude Oil Production Capacity

OECD End-of-period Commercial Inventory (million barrels)





# OPEC Response to Libya's Disruption

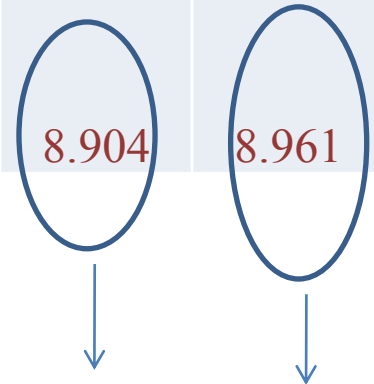
	2009	2010	3Q10	4Q10	1Q11	Jan-11	Feb-11	Mar-11
Total OPEC	28.708	29.179	29.180	29.277	29.745	30.008	29.937	29.310
Saudi Arabia	8.051	8.219	8.248	8.337	8.839	8.659	8.904	8.961

Source: OPEC Monthly Oil Report

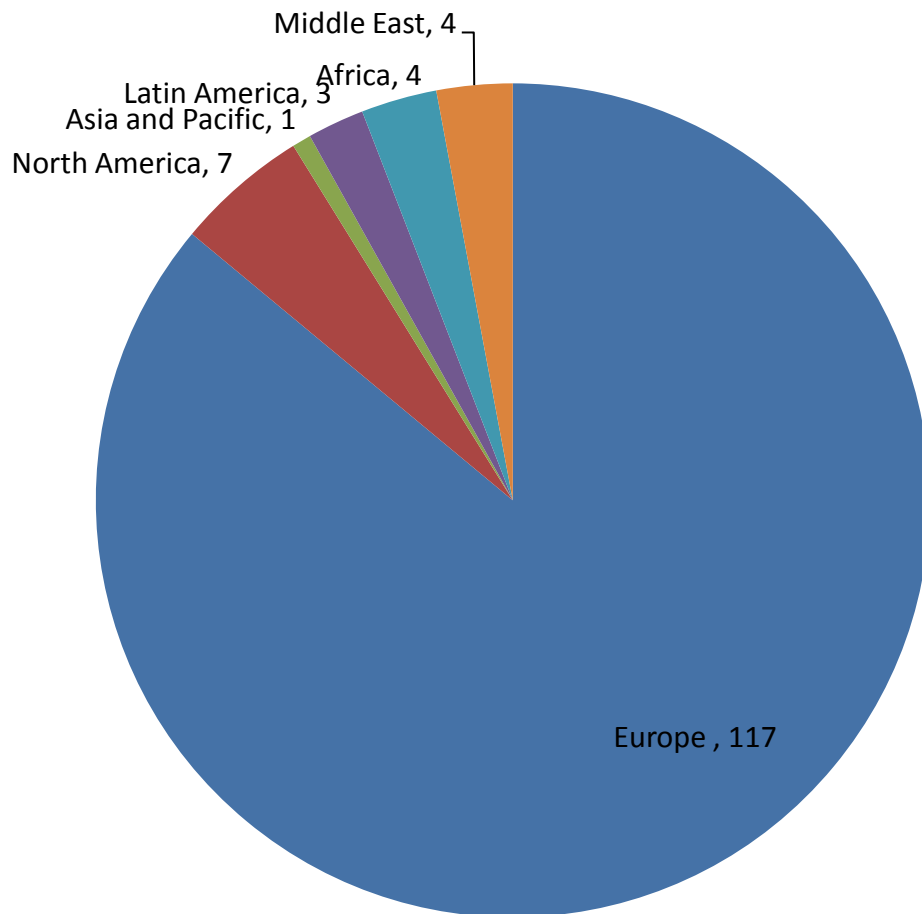
Ramp up in production occurred before the Libyan disruption to meet rise in demand

9.125 mb/d

8.292 mb/d



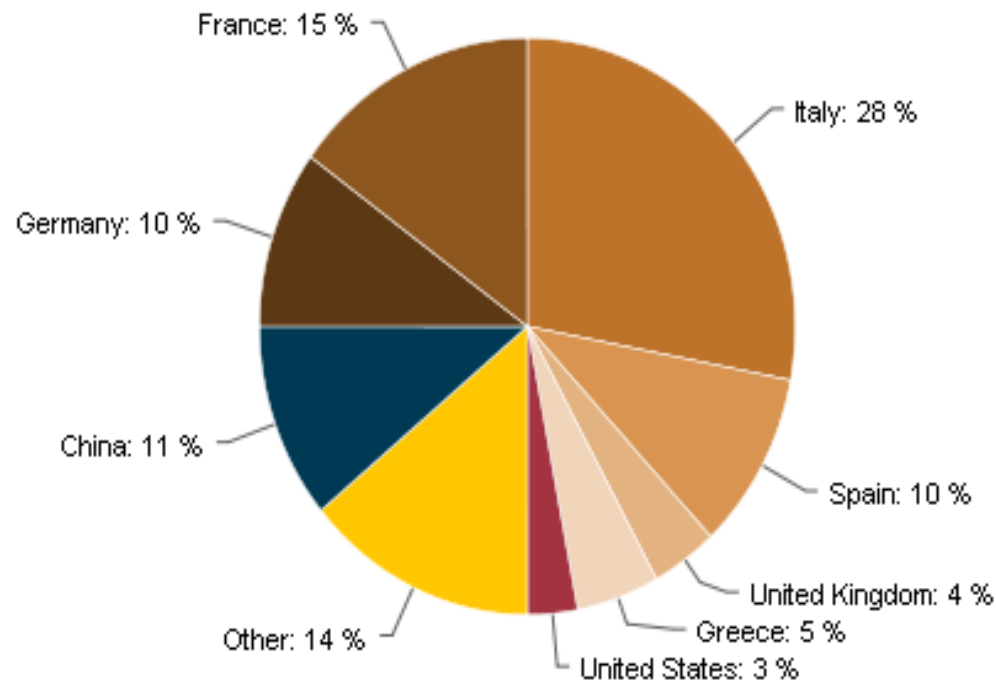
## Exports of Petroleum Products, 2009 (136,000 b/d)



Source: OPEC Website

# Libya's Exports Destination

Libyan oil exports by destination, January 2010 - November 2010



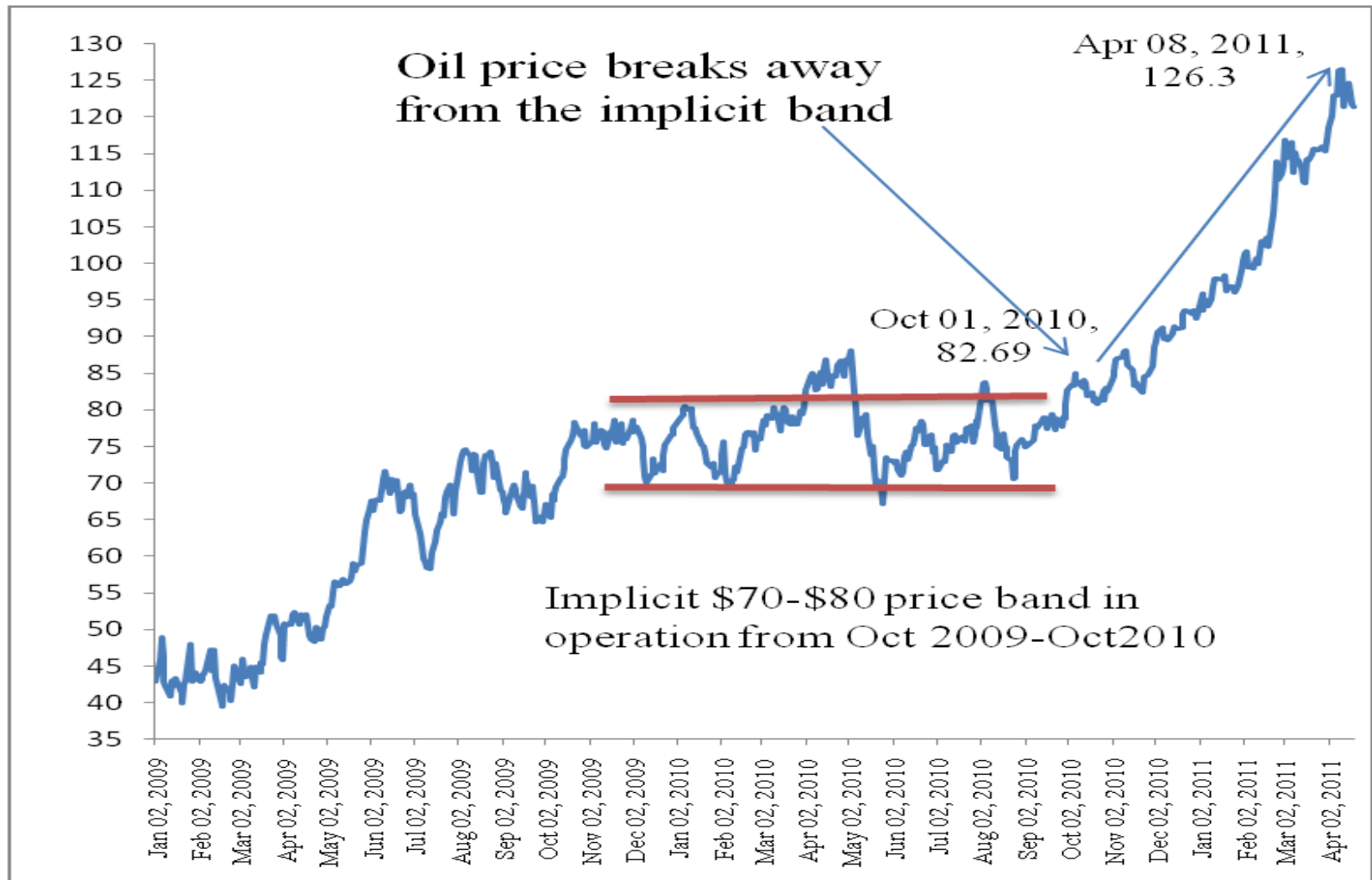
Source: Global Trade Atlas, EIA, IEA, FACTS Global Energy

# How Did the Libyan Disruption Manifest Itself?

- Changes in prompt crude prices are just most visible and immediate effect
- Market was reacting to:
- Impact of loss of volume
- The Contagion effect
  - Libya unrest was not an isolated event: Market concerns that unrest in North Africa can spill to Algeria
  - Unrest in Yemen, Bahrain and Oman can spill into Saudi Arabia and other Gulf states
  - Increased Iran-GCC tensions
- Market update probability of disruption
  - Probability assigned to disruption increased - making bets on sharp oil price movements more attractive
  - At one stage, bet on Saudi disruption quite attractive
    - Although probability assigned to such an event low, upside potential very high

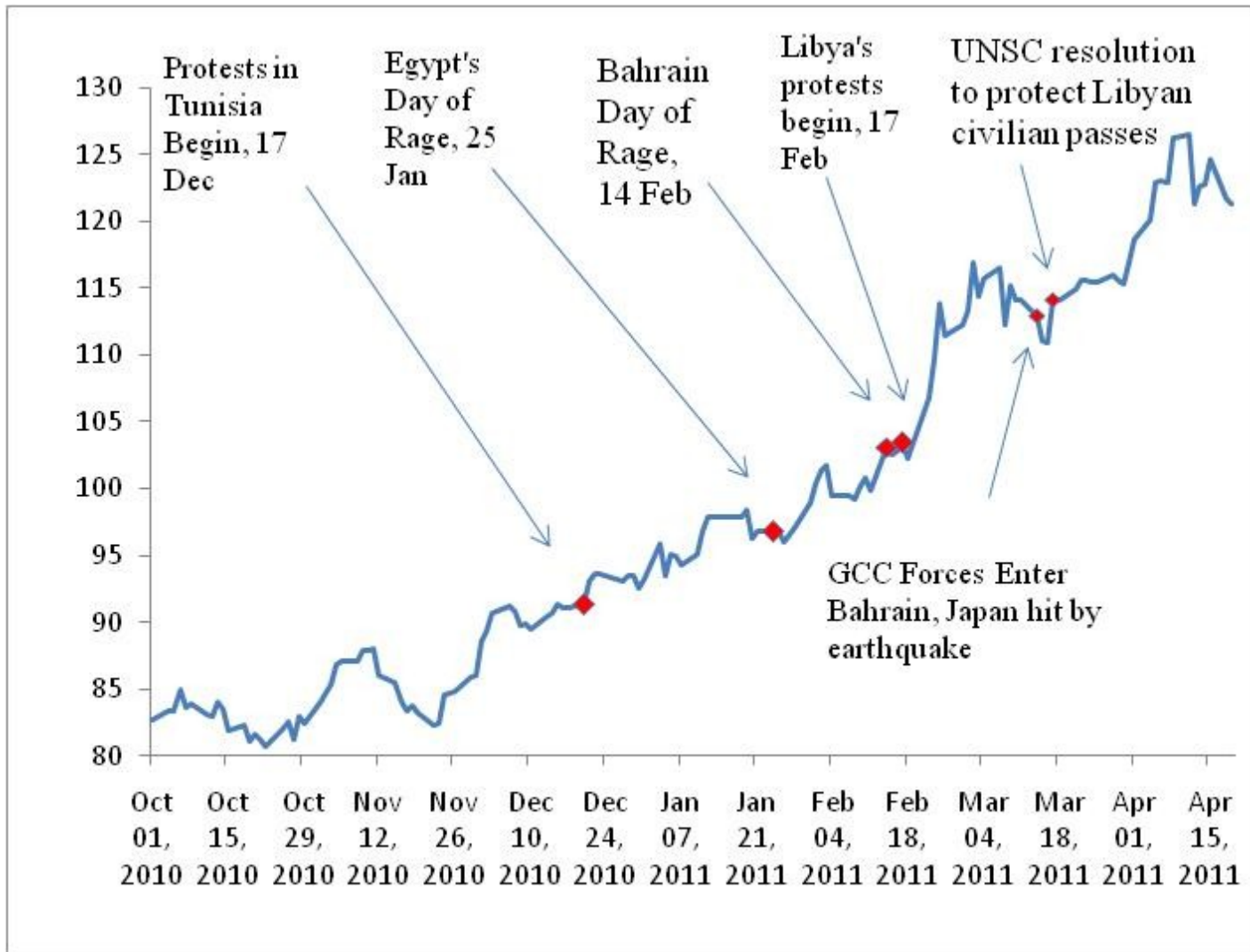
# The Break Away from the Implicit Band

Europe Brent Spot Price FOB (\$/Barrel)



# Oil Market Hit By Key Geo-political Events

Europe Brent Spot Price FOB (\$/Barrel)



# Adjustment in Price Levels

- Price can move within a wide band without inducing visible supply and demand effects to put a ceiling on the oil price
  - What response does the market expect if oil price increases from \$80 to \$100?
  - If market does not expect feedback on supply, demand, policy, then oil price could continue on its upward march
- Changes in oil prices may not only reflect current supply-demand fundamentals as these are not known at the time
- Also reflect perceptions about
  - Potential changes in evolution of demand-supply, based on macroeconomic data flows
  - Updating probability of disruptions based on geopolitical developments
  - Coordination of investment decisions on strategies of other players and public signals

# Price Volatility

- Market looking for some direction
  - Flow of information about size of disruption difficult to verify at start
  - How long will disruption last?
  - Uncertainty about response of key market players
    - Despite Libyan disruption, OPEC supply declined in March. Weak demand or miscalculation which will tighten future market fundamentals?
  - Data on supply/demand side keep being revised

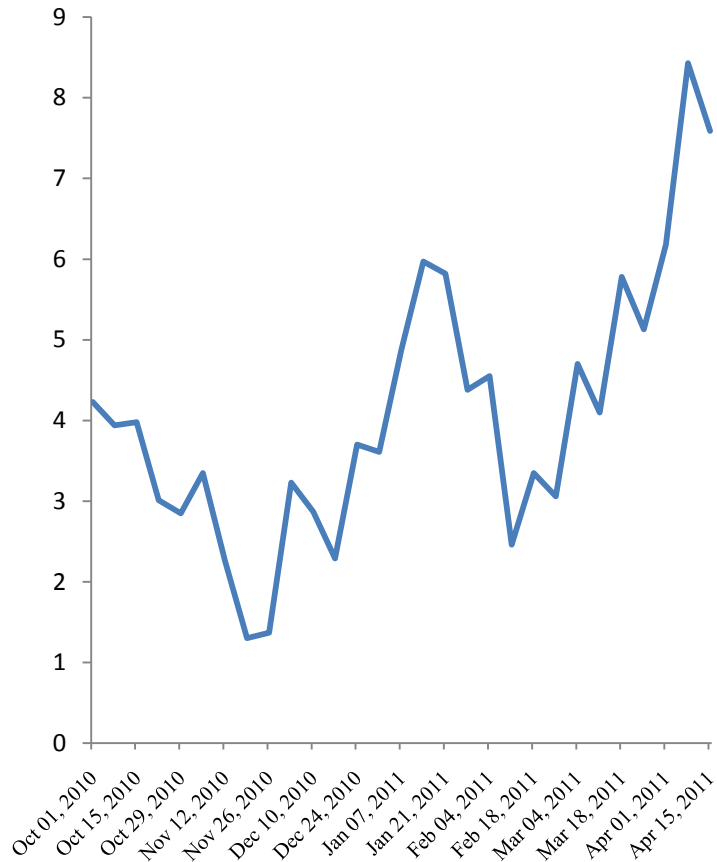


# Adjustment in Price Differentials

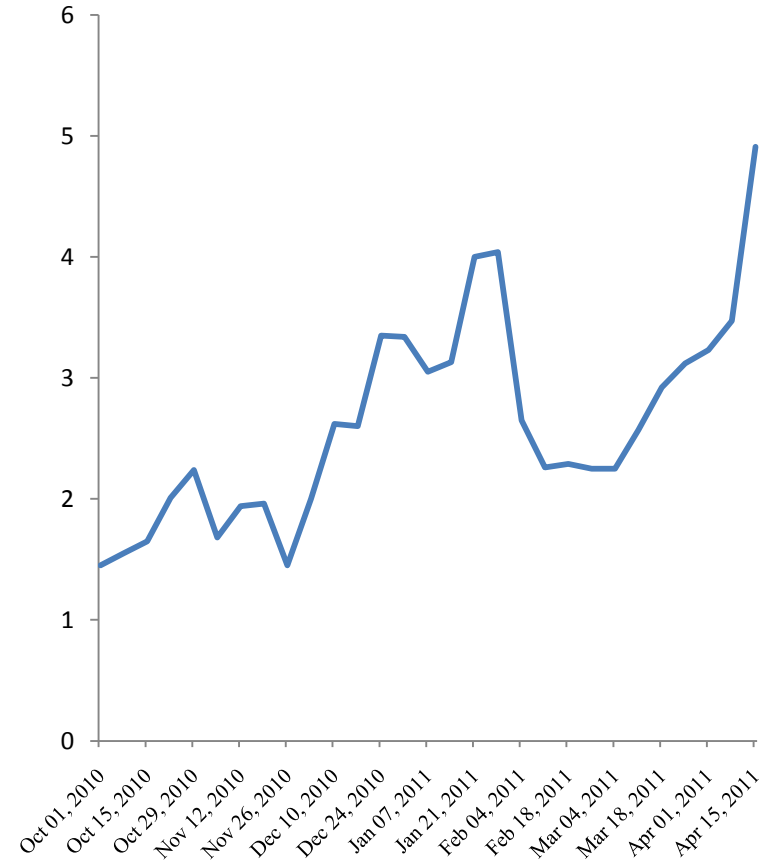
- More important than price level movements is adjustments in price differential
  - Between different types of crude oil
  - Time spreads
  - Between crude oil and products
  - Between products
- Adjustments in price differentials needed for market to absorb the wave shocks originating from disruption and direct trade flows
  - Movements in price levels play a lesser role
- Oil market has shown great flexibility to deal with the physical disruption through changes in relative prices which induced shifts in trade flows across markets

# Crude Oil Price Differentials

Brent-Dubai Price Differential (\$/barrel)



Brent-Urals Price Differential (\$/barrel)

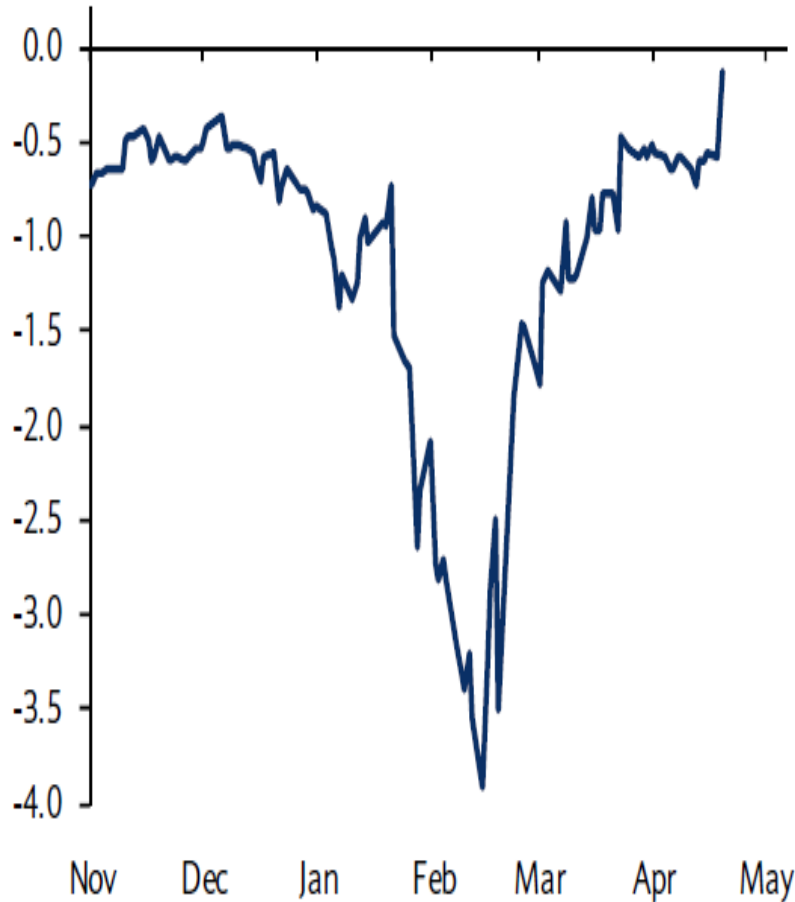


Source: EIA

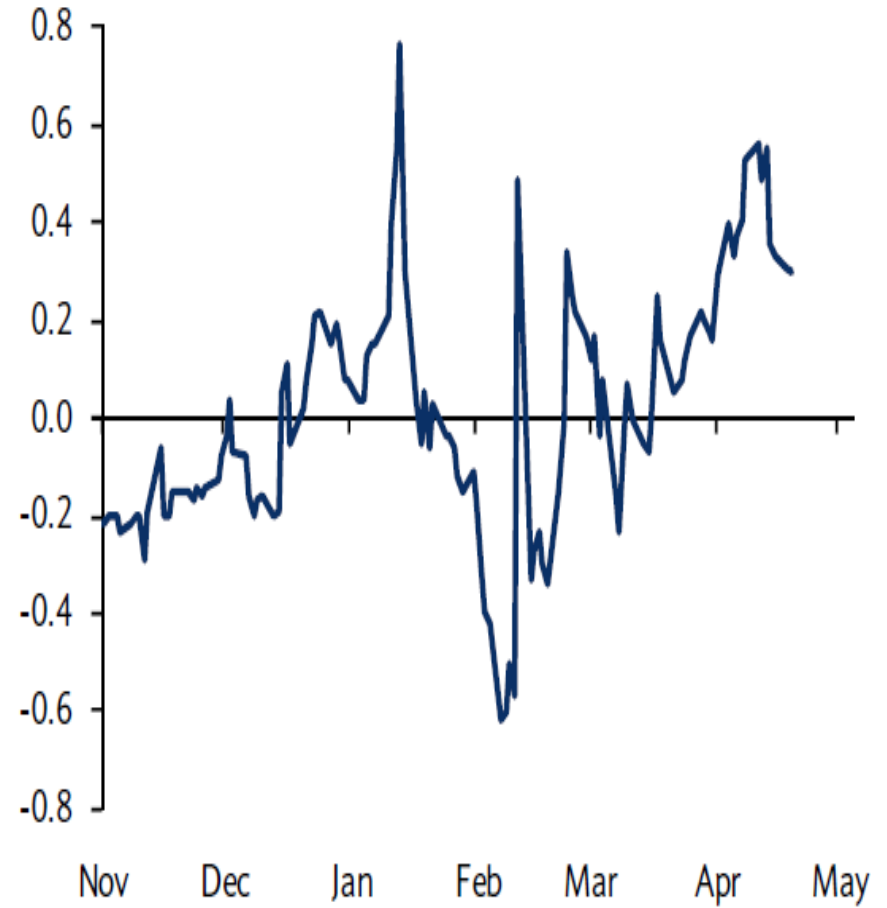
- Disruption of Libyan exports plus increasing demand by refiners and electric power utilities in Japan for light-sweet crude oil
- Increasing production of mostly sour grades from Middle Eastern countries

# Crude Oil Time Spreads

WTI Term Structure: 1<sup>st</sup> month-2<sup>nd</sup> month



Brent Term Structure: 1<sup>st</sup> month-2<sup>nd</sup> month

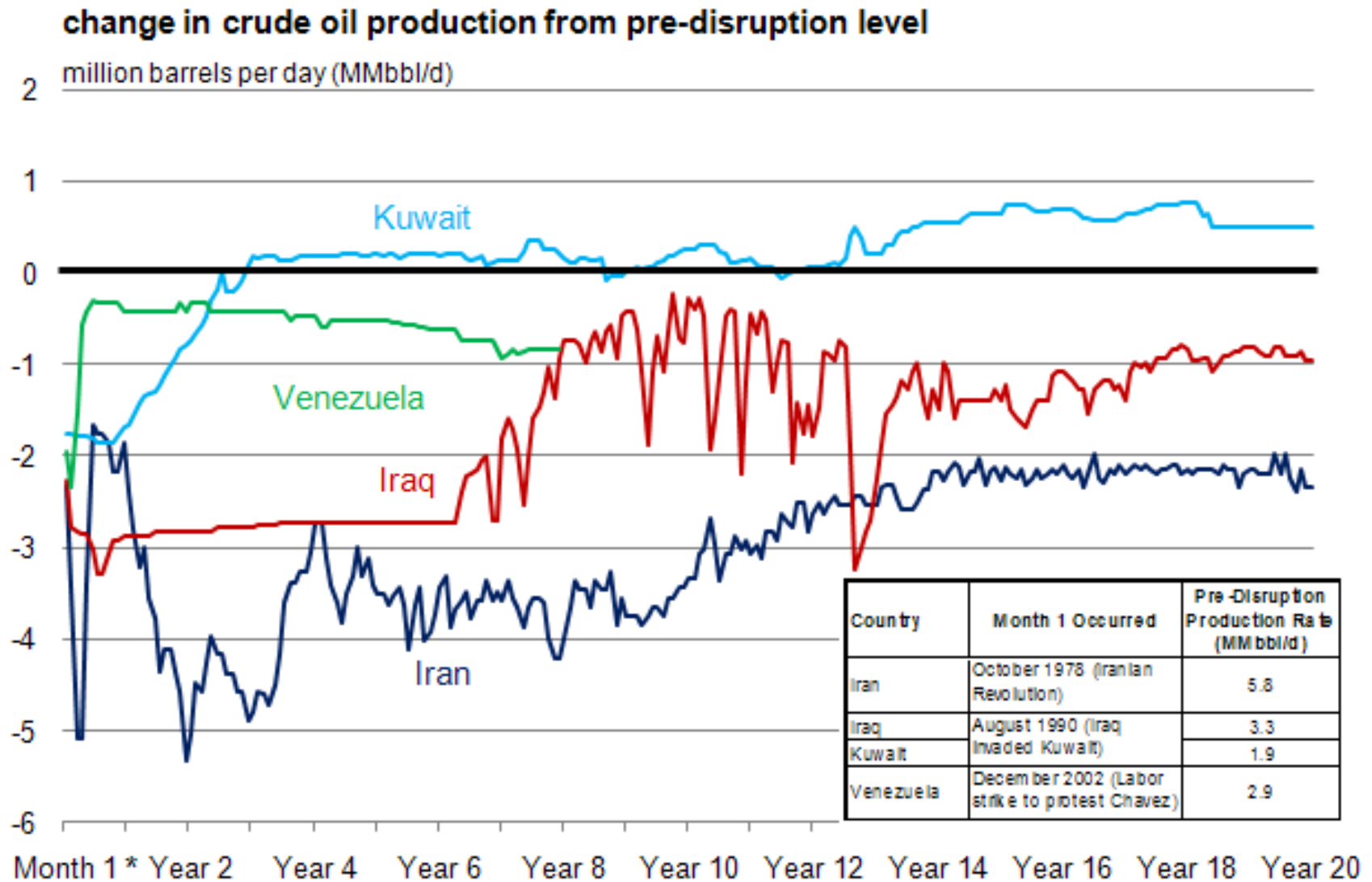


Source: Barclay's Capital

## ....But there is the Long-Term Dimension

- Current Libyan situation
  - Prolonged civil war
  - Possible fragmentation of country
- Impact of civil conflicts/instability on oil supplies twofold
  - Results in short to medium term supply losses as it reduces ability of country to produce and export oil
  - Affects long term productive capacity of countries through hindering investment

# Disruptions and Long-Term Productive Capacity

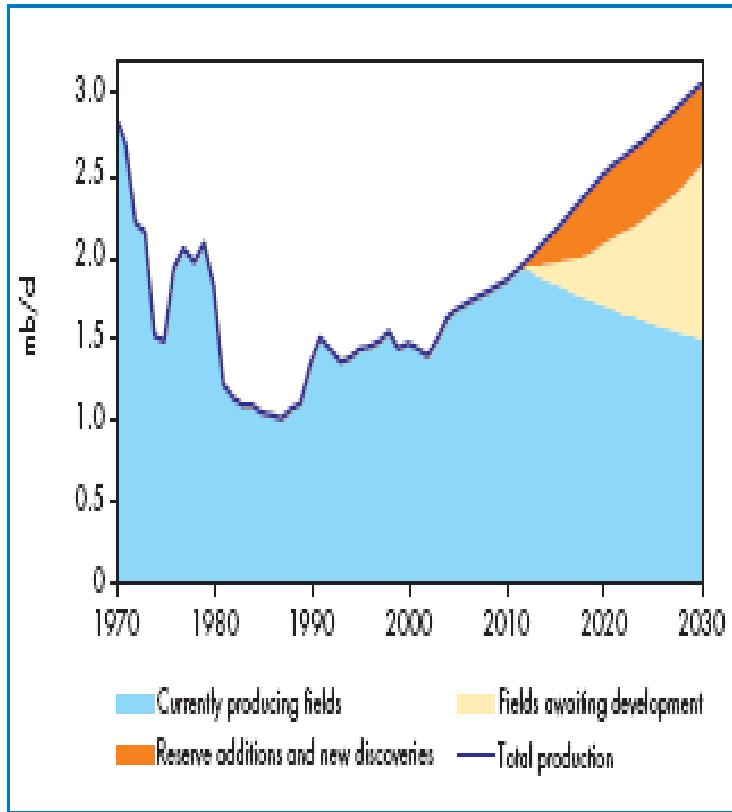


# Summary

- Oil markets have shown strong resilience to disruption
- Adjusted to Libyan output loss through price adjustments (especially in price differentials), use of spare capacity, and shifts in trade flows across regions
- Questions:
  - Will the production infrastructure suffer any lasting damages?
  - How long will the civil war last and how would this affect long term productive capacity?
  - What type of landscape will emerge at the end of conflict?
    - Fragmented country
    - New elites
    - Weak administrative and bureaucratic apparatus
    - New regulatory structure
    - Revision of oil and gas contracts
    - Revision of fiscal terms which were in the first instance unattractive
      - Will a new government be in a position to grant better fiscal terms?

# Libya Not Expected to Add Much

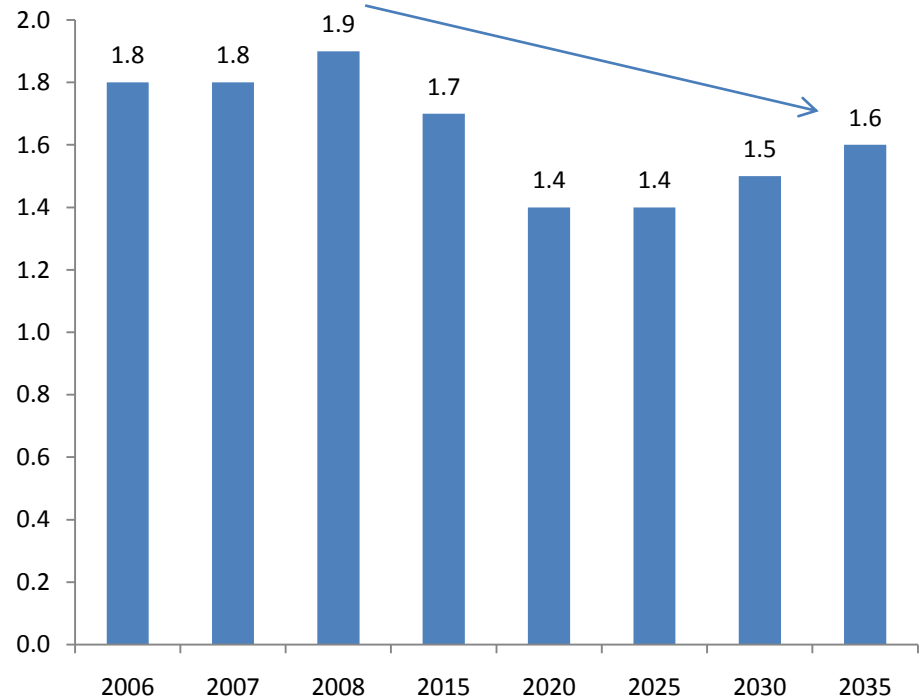
Projected Iraq Oil Production Capacity  
Over-Optimistic



Note: Includes NGLs and condensates.

Source: IEA

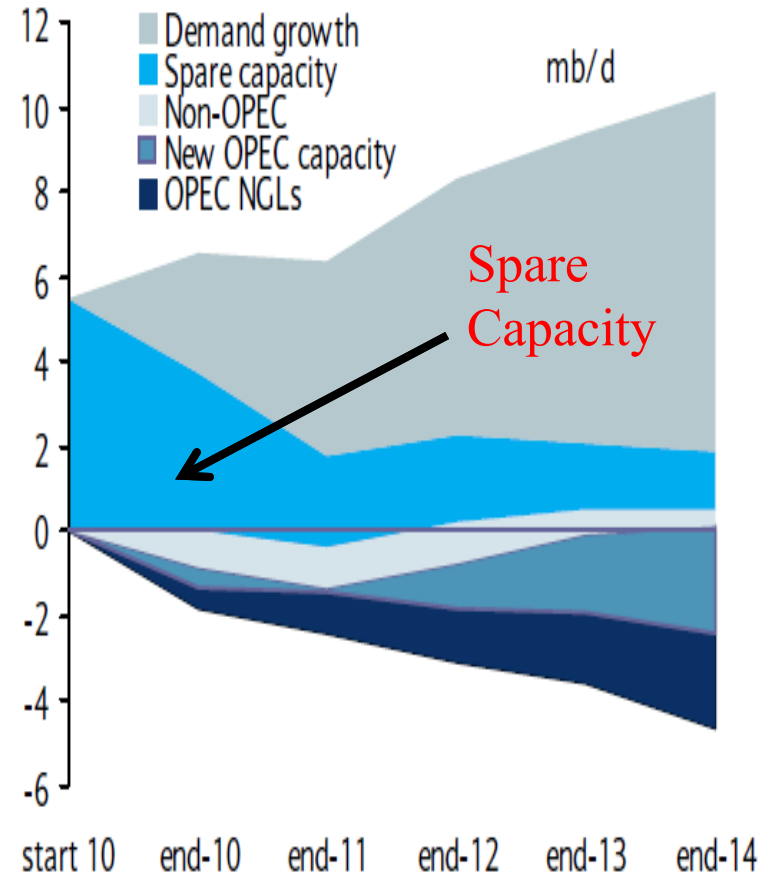
EIA Latest Projection of Libyan Oil Production



Source: EIA

# Dominant Story in the Oil Market

- Market fundamentals are tight and likely to tighten further in near future
  - Limited growth in non-OPEC supply (peak oil and/or over-ground constraints)
  - A slowdown in investment and future production in OPEC countries
  - Rapid growth in global oil demand fuelled mainly by non-OECD economies
- Predict “likely return to energy shortages” and “risk of a crunch in the oil supply”





# Current Events Fuel this Story

- Short-term effects
  - Libya disruption speeded up the erosion of spare capacity
  - Risk of political problems spreading to Saudi Arabia
  - Recent robust demand growth both in OECD and non-OECD
- Long term effects
  - Inability of MENA region to meet the investment requirement and increase production to meet projected global demand increase due to civil unrest/sanctions
  - Reform of prices to slowdown growth in oil domestic consumption will become more difficult after recent political shockwaves affecting ability of key OPEC members to export
  - Response to current events will increase the reservation price required by OPEC member countries

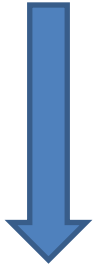
## Does MENA have capability to increase production?

- Price is only one of the determinants of investment in MENA
  - Under-ground factors
  - Above ground constraints
    - *Wars and conflict*
    - *Sanctions*
    - *Organisation of the oil sector & capability of National Oil Company*
    - *Relationship between government and NOC & flow of funds back into industry*
    - *Fiscal system and openness to foreign investment*
  - Inter-generational considerations and optimisation of the reserve base
  - Call on MENA Oil
    - ‘Security of demand’ vs ‘security of supply’

# Key Middle East Players and Supply Potential

## *Limited Growth Potential*

- Qatar
- Algeria
- Abu Dhabi
- Kuwait



Marginal Players  
Predictable pattern  
of supply growth

## *Medium Growth Potential*

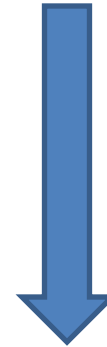
- Iran
- Libya



Unpredictable  
pattern of supply  
growth but likely  
to be marginal in  
short to medium  
term

## *High Growth Potential*

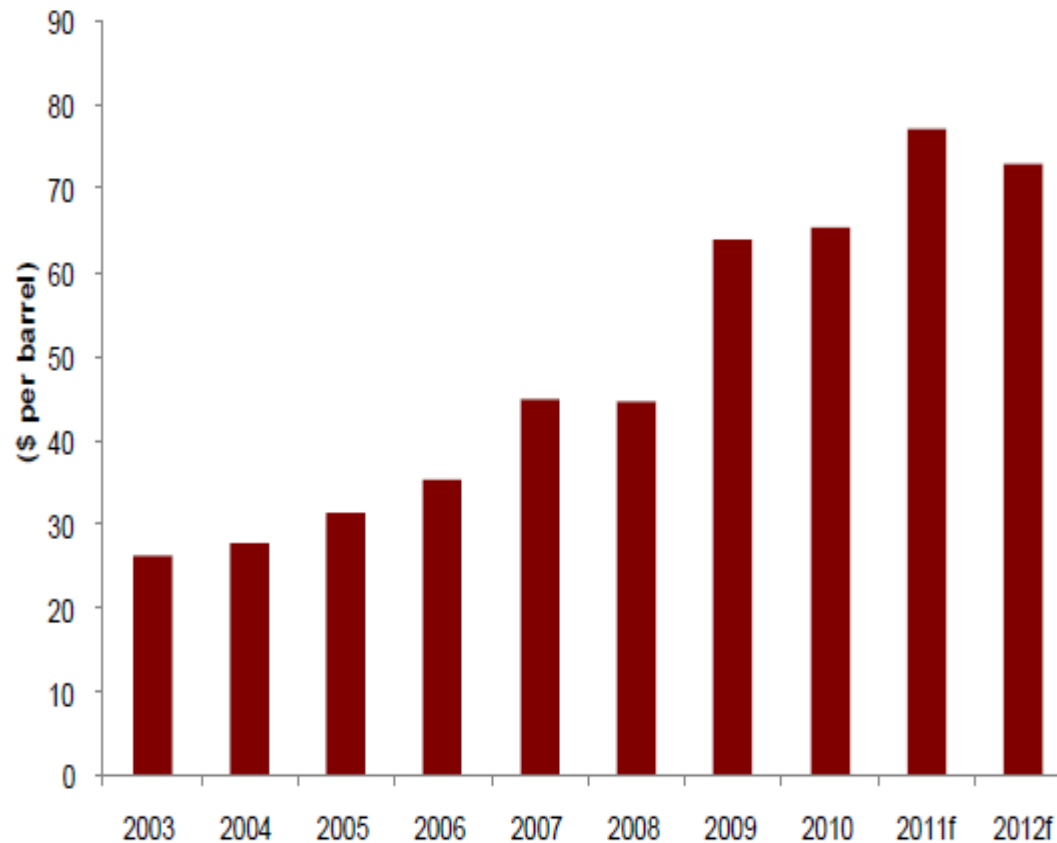
- Saudi Arabia
- Iraq



Game changers

# Oil Price Need To Balance Budget Keeps Increasing

Oil Price Needs to Balance Budget in Saudi Arabia



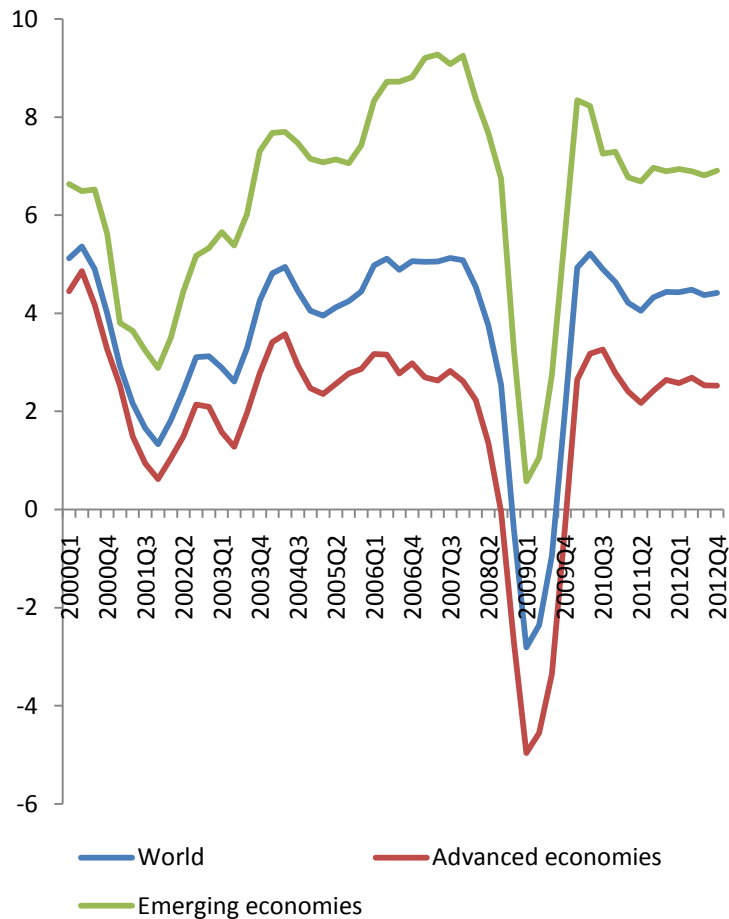
Source: Jadwa Investment

# What Could Weaken the Dominant Story?

- Current behaviour of oil prices endanger global growth prospects
  - But major projections of world growth not revised despite disruption
- Current disruptions and oil price behaviour reduce the attractiveness of the oil as a reliable source of energy inducing a structural shift in government policy and consumer behaviour and accelerate oil substitution policies
  - But long term effect

# Global Outlook Still Benign

## Real GDP Growth



## Core Inflation

