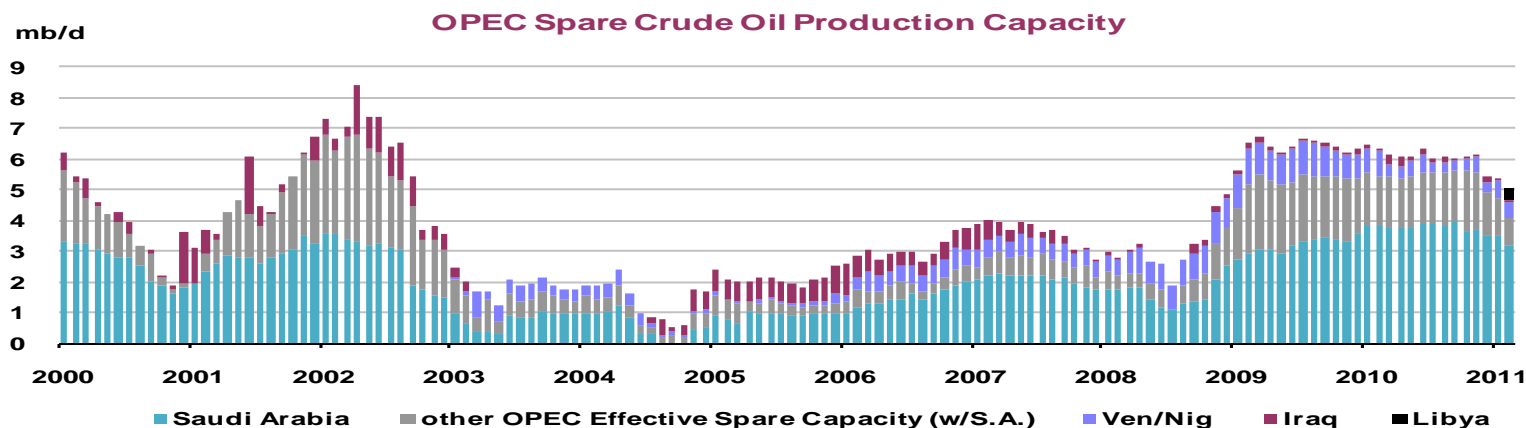


# Investor Flows and the 2008 Boom/Bust in Oil Prices

Discussion by Bahattin Buyuksahin

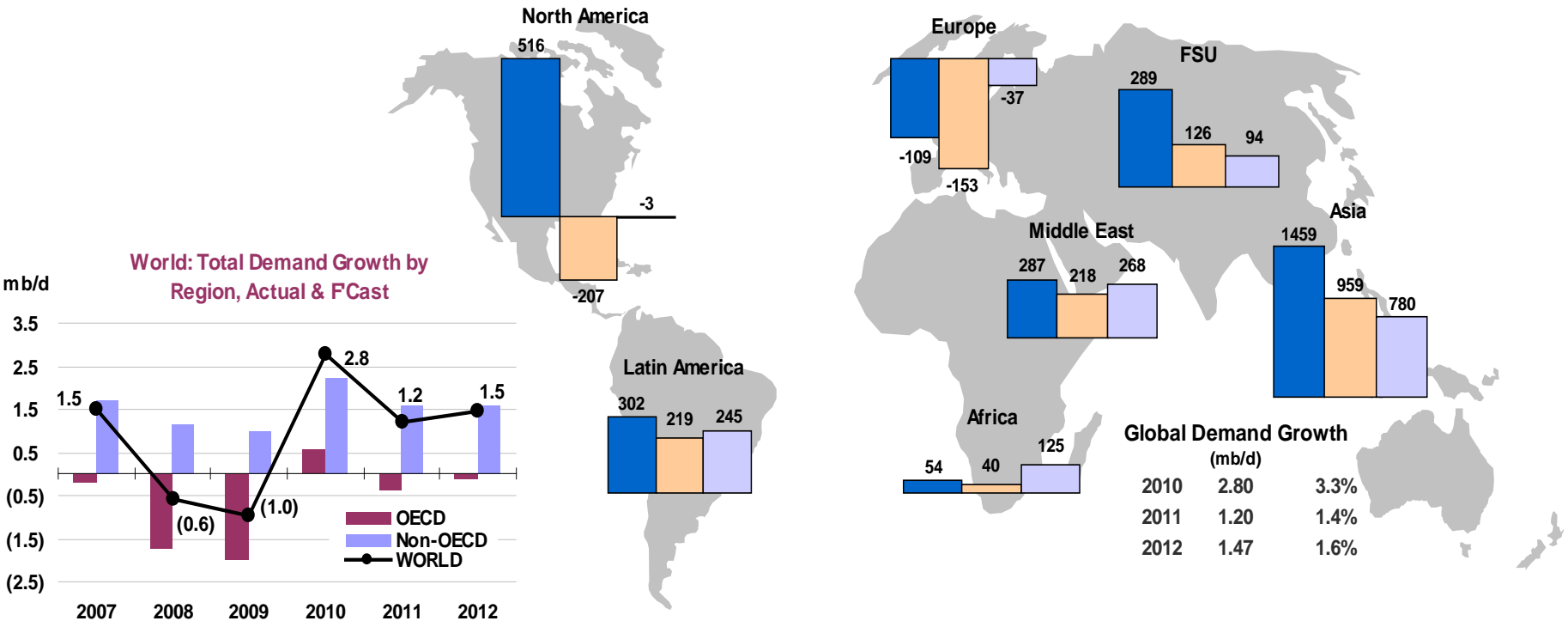
# Quick Overview of Oil Market:

- Rising uncertainty about the strength of global economy going forward has major impact on the oil market outlook
- Emerging markets, hitherto the cornerstone of demand growth could see the greatest impact from economic slow-down
- Until the recent concerns on sovereign debt (OECD) and inflation (non-OECD) intensified, higher crude prices had derived from a clear tightening in market fundamentals, manifested by tightening OECD stocks and diminishing levels of OPEC spare capacity
- Loss of Libyan crude supplies has reduced effective spare capacity to around 4 mb/d but supplies still well above the sub 2 mb/d lows seen in 2008 and at mid-decade
- Saudi Arabia holds almost 80% of spare capacity at 3.2 mb/d



# Demand to Reach 91.0 mb/d in 2012

Global Oil Demand Growth 2010/2011/2012  
thousand barrels per day

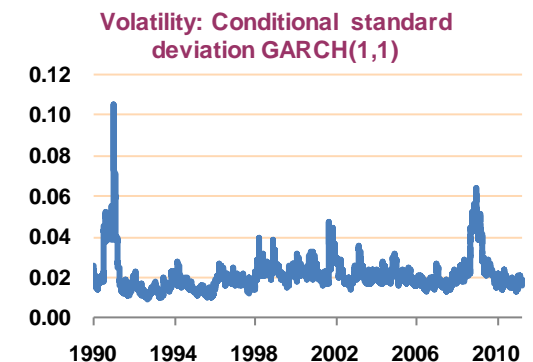
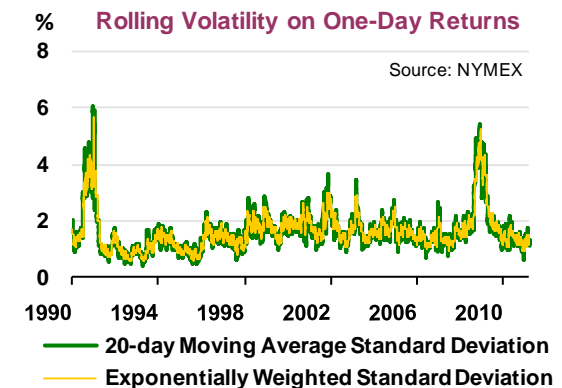
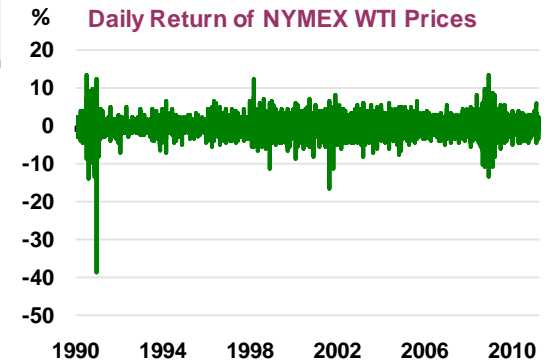


- 89.5 mb/d in 2011; +1.2 mb/d y-o-y (+1.4%)
- 91.0 mb/d in 2012; +1.5 mb/d y-o-y (+1.6%)
- Revisions vs. last:
  - 2010: +320 kb/d; 2011: +250 kb/d
  - These adjustments include baseline adjustments for the non-OECD (2009) and OECD (2010)

- **The IEA sees a multitude of factors driving oil price direction. In the short term, macro-economic and financial market expectations can play a role in amplifying prevailing market sentiment based on today's supply/demand situation. But market fundamentals remain the primary driver of price direction over time. Shifts in fundamentals are often not immediately apparent, because of indifferent short term oil market data and time lags. Hence, continued efforts to obtain better short term oil market data can help diminish market volatility.**

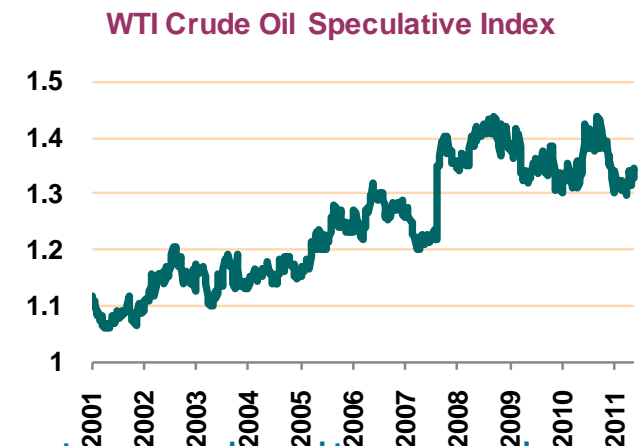
# Volatility in Crude Oil Prices

- Prices for oil, like those for many other commodities, are inherently volatile and volatility itself varies over time
- Accurate measures of volatility are important for understanding the functioning of markets
- Examination of historical patterns shows volatility observed during 2008-2009 is actually lower than the peak observed in 1990-1991
- Conditional volatility estimation also suggests that the increase in volatility observed during 2008-2009 was a temporary phenomenon and that volatility in the oil market remains consistent with historical averages
- The apparent increase in the volatility of oil prices during 2008-2009 raises questions about the determinants of volatility in oil markets
  - It has been argued that the emergence of a new class of financial traders, as well as increased participation of non-commercial traders in crude oil derivatives markets, has transformed the oil market into an intrinsically more volatile market.



# Hedgers, Speculators and 'Excessive' Speculation

- Speculators provide immediacy and facilitate the needs of hedgers by mitigating price risk, add to overall trading volume, which contributes to more liquid and well-functioning markets
- Even when speculators trade with one another, the greater liquidity resulting from this 'excess speculation' should decrease hedgers' trading costs
- Optimal level of speculation?
- If long and short hedgers' positions in a given commodity futures market were exactly balanced, speculators would not be needed in that market
- Because long and short hedgers do not always trade simultaneously or in the same quantity, however, speculators must step in to fill the unmet hedging demand
- Also, speculators hold a range of views about the future and take positions on both sides of the market
- As a result, speculative activity almost always substantially exceeds the level required to offset any unbalanced hedging



# Hedgers, Speculators and 'Excessive' Speculation

- The “Working” speculative index value has risen over time to an average of 1.40 in 2008, implying that speculation in excess of minimal short and long hedging needs reached 40%
- While this rise in the speculative index to 1.40 may appear alarming, in fact it is comparable to historical index numbers observed in other commodity markets
- Further, while a sharp rise in the speculative index was visible at the time crude prices rose to record highs in 2008, such a relationship is much less apparent for the 2010/2011 period
- Academic opinion remains highly polarised on the respective roles of hedgers and speculators, and on the concept of ‘excessive’ speculation in the crude oil market
  - Some argue that speculative activity in crude oil futures markets does not lead price changes, but reduces volatility by enhancing market liquidity (Buyuksahin and Harris (2011), Buyuksahin, Brunetti and Harris (2011), Irwin and Sanders (2011))
  - Others find significant impact of investment flows by non-user participants on prices and volatility of commodities (Singleton (2011), Xiong and Tang(2010), Mou (2010))
- However, both groups agree on the fact that cross-market linkages (commodity-commodity, commodity-equity) have remained very high or exceptionally strong since autumn 2008

# Physical and Financial Market Linkages

- Price discovery generally takes place in derivatives markets, which themselves use perceptions on current physical demand and supply conditions as well as expectations of future conditions
- Increased correlations among commodities and equities
  - They might be responding to common shocks, such as expectation of higher growth in China and other emerging countries
  - Or investment by institutional investor help bring these two different markets into sync
- Empirical studies generally show no causal linkages from speculators' futures market position to prices
  - However, the lack of information about OTC markets make these studies' finding questionable.
  - The increased forays by both physical and financial market players into each others' market make these two markets dependent, and estimating relative importance in price formation almost impossible.



- Market participants, including speculators, try to anticipate their competitor's move given imperfect information on economic fundamentals as well as on speculative activity
- Decision is sometimes affected by other participants' behaviour (herding)
- That is to say investor sometimes mimic their competitor move
- Investor might also have different opinions about the future course of economics fundamentals, heterogeneous investor rather than representative investor
- Although these investors might be using common knowledge, their interpretations of common information might be different, which lead to higher trading volume, comovements among different asset classes as well as market price volatility
- This has the effect of moving prices from their fundamental value, higher volatility and boom and bust in prices

# More Data More Data More Data

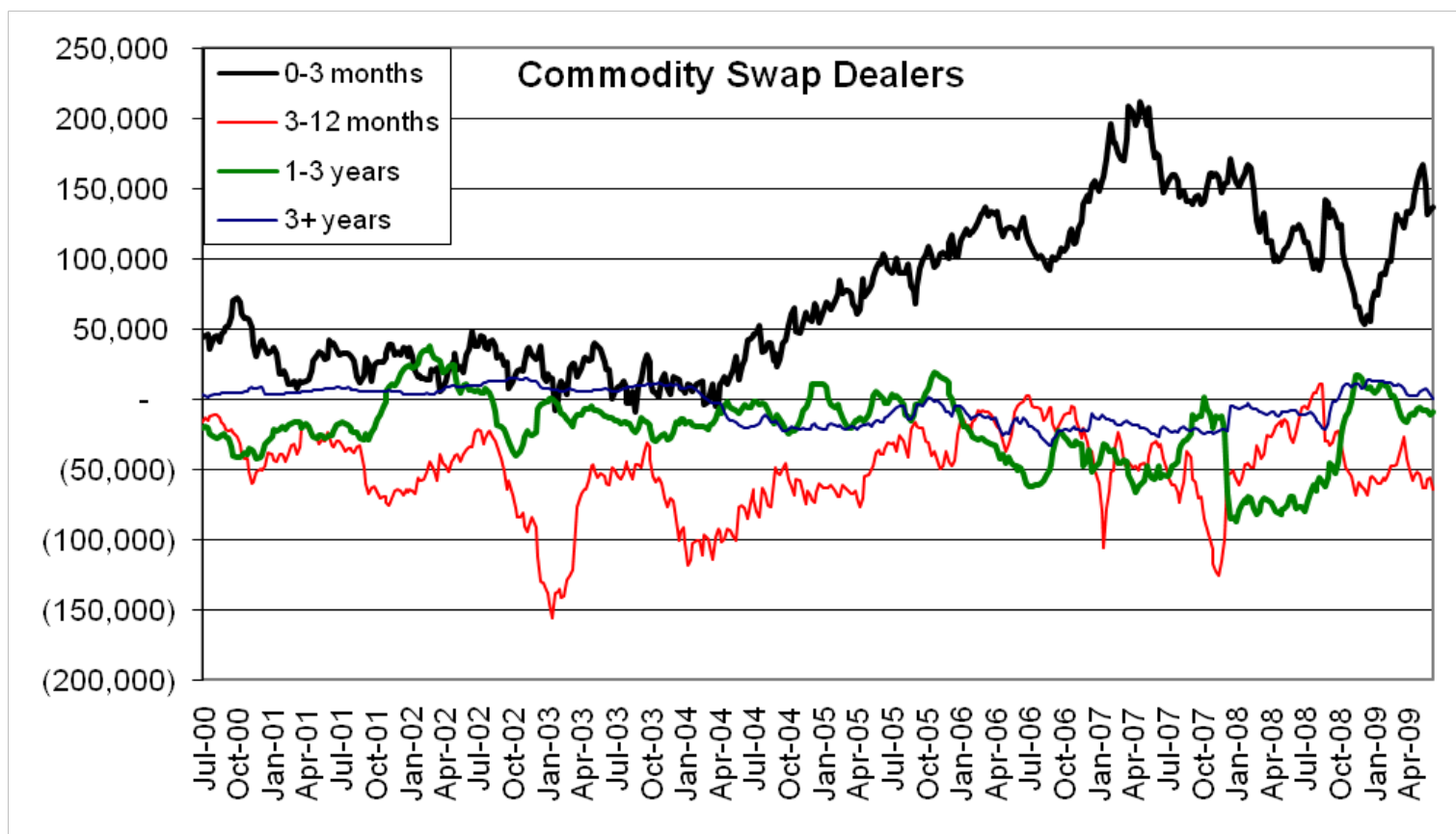


- Index funds generally do not themselves enter in futures markets to hedge. They generally have OTC long position through swap dealers (short in OTC), swap dealers then hedge their short position in OTC market by going long in futures markets.
- In general, hedgers in OTC market go short in longer term contract. Therefore, long position in near maturity contracts can be a good proxy for commodity index investment, which is used by Buyuksahin and Harris(2011) or Brunetti et al(2010)
- Singleton argues that incentives for index-fund managers to purchase longer-dated exposures through futures when the market is in contango increased( Parsons (2010) put similar arguments). However, CFTC LTRS did not provide any evidence of this)
- In general commodity index investors position shows up in LTRS data 75 days before the maturity and roll to first deferred contract 25 days before maturity of nearby contract

# CFTC LTRS Data

## Differential Behaviors at Near/Far Ends

- *E.g.*, Swap Dealers: net long nearby / net short backdated



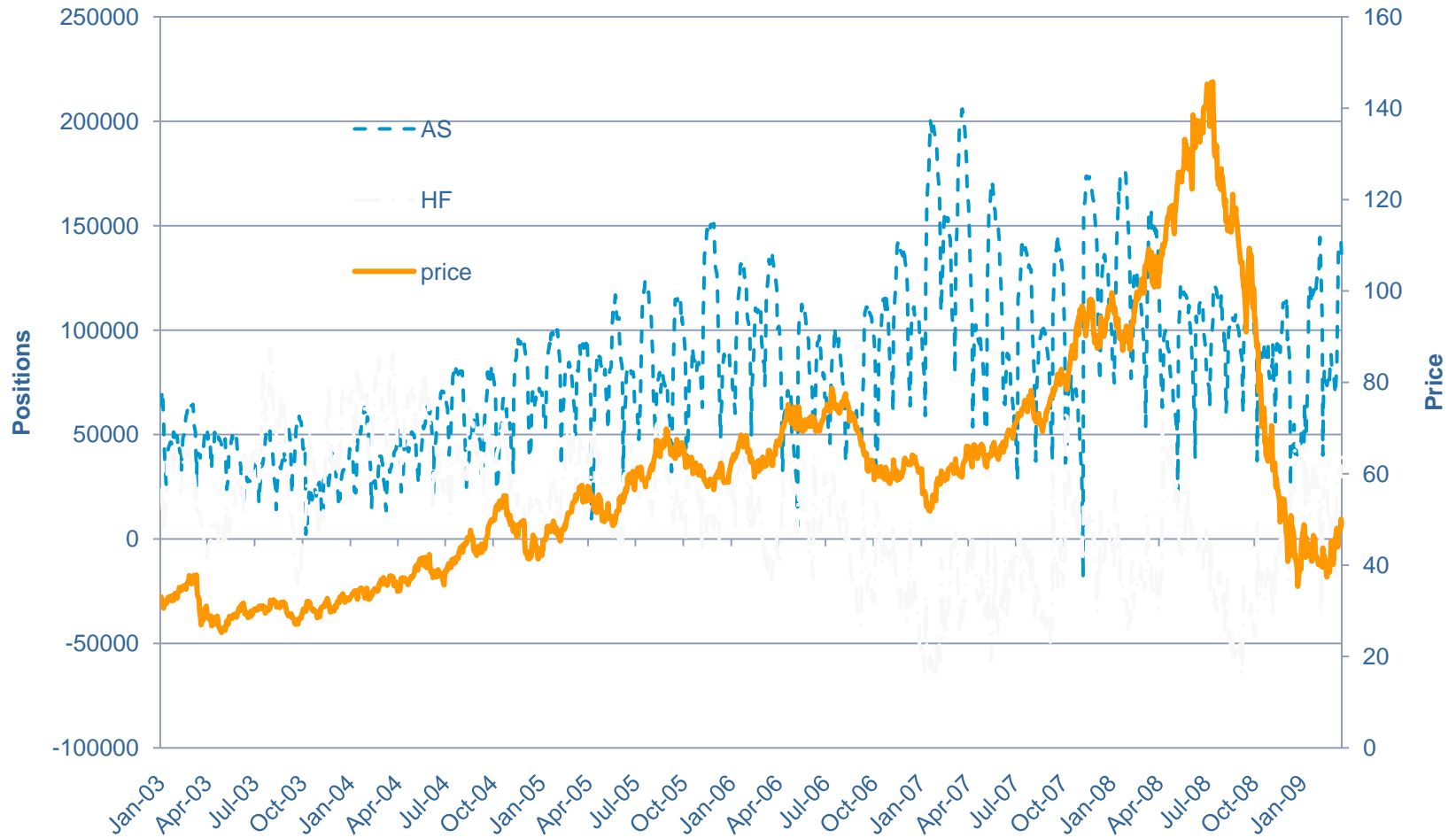
- Singleton's paper uses imputed CIT position based on Master (2008) methodology
  - Imputation is based on CFTC Supplemental Commitments of Traders (SCOT) report, in which there is no data for crude oil
  - SCOT data itself is problematic even for 12 agricultural commodities to measure the CIT activity
  - CFTC initially identified 32 (now 43) CIT traders, and categorize The COT-Supplemental classifies all the positions of a trader engaged in commodity index trading based upon the preponderance of the trader's trading strategy. That is, if a preponderance of a trader's trading is index related, then all of the trader's positions get classified as index related for COT-Supplemental purposes. As such, the published aggregate futures position in the COT-Supplemental may overstate or understate the actual amount of index trading (overstate it to the extent the positions reflect other trading strategies, and understate it to the extent that index positions are internally netted against non-index positions before the net position is brought to the futures markets)
  - CFTC IID provides more reliable index investment activity (including OTC market)

- Imputation methodology lead to huge measurement errors, not some measurement errors as suggested by Singleton (Irwin and Sanders) due to
  - Netting effect might not be important for agricultural commodities where, the swap dealers' futures positions are generally limited to long futures hedges offsetting their short OTC exposure to those pension funds or other index-based traders. However, netting effect might be very important where Many swap dealers, in addition to their commodity index-related OTC activity, enter into other OTC derivative transactions in individual commodities, both with commercial firms hedging price risk and with speculators taking on price risk.
  - Mapping Algorithm might lead to the measurement error suggested by Singleton and Irwin and Sanders(2011). Irwin and Sanders show that level of errors is quite large. Comparing imputed position with IID data provides glimpse of large measurement errors (52% mean absolute errors).

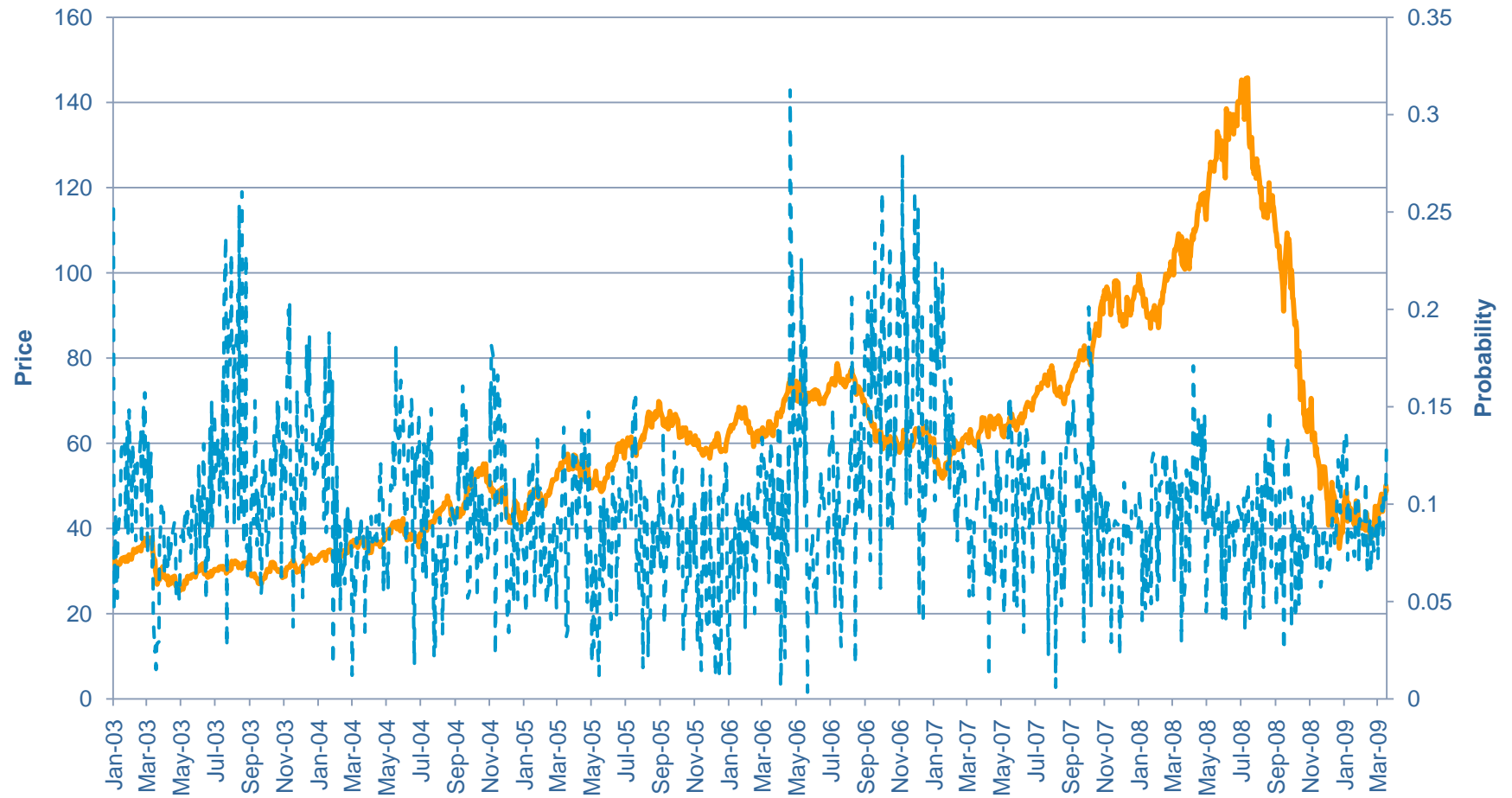
# Regression Results

- Open interest as a proxy for what? Singleton argues that it embodies information about future economic activity that investors find useful for predicting future commodity prices. I am not sure about this interpretation.
- It might be better to use volume of trade/ open interest as a proxy for momentum
- How about endogeneity? The possibility of index flows is driven by excess return? They might be responding to common shocks, such as expectation of higher growth in China and other emerging countries
- Does predictability imply that speculation has distorted prices (Pirrong)?
- Buyuksahin, Brunetti and Harris (2011) also analyze whether large traders trading strategies shed light on the transition between different market regimes. Using regime switching models with Time varying transition probabilities which are conditional on traders' positions.
- They find also that hedge funds position, not swap dealers, have predictive power on moving from one regime to another. However, this does not imply that speculators drive prices from their fundamental value.

# Crude Oil



# Crude Oil P(1,0): Explanatory Variable: Hedge Fund Positions in Levels





# Regression Results

- Killian SHIPPING index as a proxy for global economic activity?  
This variable biggest component is in fact crude oil prices.  
Explaining crude oil price return with itself , in addition to lag values of return variable?
- How about China, India, Middle East and Latin American demand growth?