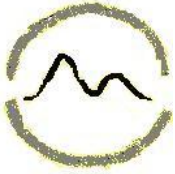


1

# *Energy, Speculation and the Financial Crisis*

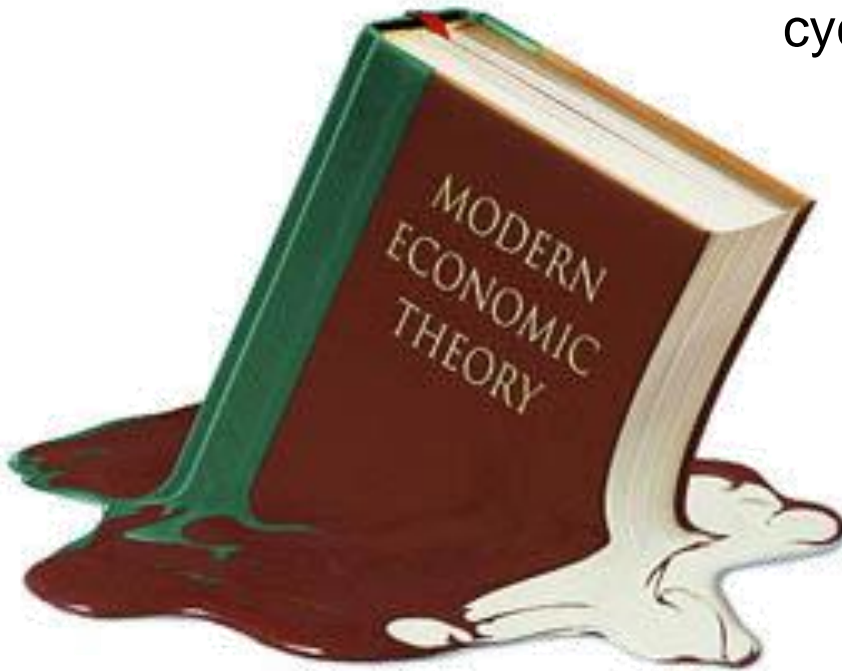
*Prof. Dr. Georg Erdmann  
TU-Berlin [[www.ensys.tu-berlin.de](http://www.ensys.tu-berlin.de)]  
and President of the IAEE [[www.iaee.org](http://www.iaee.org)]*

*10th IAEE European Conference  
7 September 2009 Vienna*

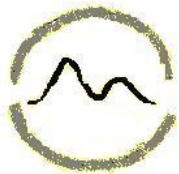


2

## *Why Economists had been so Wrong*



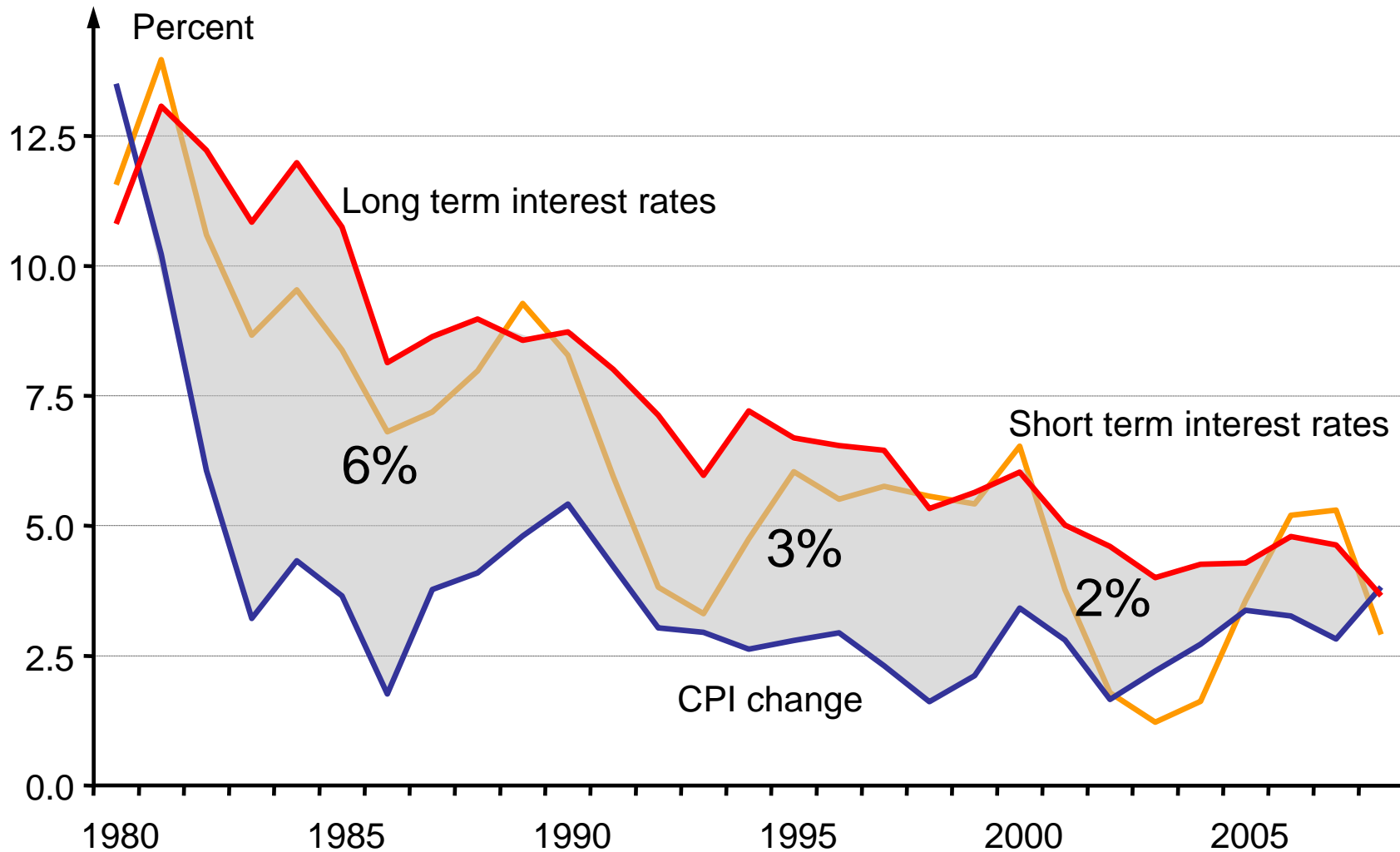
- Inappropriate variables in the (business cycle) models
  - stock price indices become irrelevant in bubble situations
  - But overleveraging of the financial sector is quite relevant for financing investments
- neglecting (among others) macroeconomic interdependencies: „We don't see the wood for the trees“

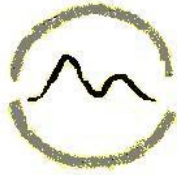


# CPI, Long and Short Term Interest Rates

[USA; Data source: Sachverständigenrat 2009]

3

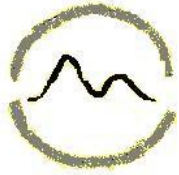




4

## *Oil Exports as a Cause for Excess Liquidity*

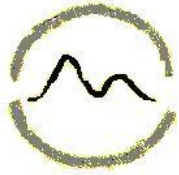
- The liquidity needs of the global oil importers are not the only motivation for the central banks to supply excess liquidity (trade growth, balance of payment disequilibria).
- But the dimension of the oil based liquidity need is significant
- Global oil production 82 mio. b/day or 30 bn. b/year
- Average price 75,- USD/b =2250 bn. USD/year  
Finding and Lifting Costs 35,- USD/b  
Resource rent 40,- USD/b or 1200 bn. USD/year
  - 2% of world annual GDP or
  - 10% of world annual investment



5

## *Oil Exports as a Cause for Excess Liquidity*

- The resource rent that is flowing to the governments of exporting countries is used for
    - financing imports for domestic consumption or investment (thereby recycling liquidity back to the importing countries)
    - foreign exchange reserves
    - Sovereign Wealth Funds (SWF) (Hartwick rule)
- } Absorption of global liquidity
- To prevent for the “Dutch Disease”, SWF must recycle large parts of their assets to foreign countries.



6

## *Hartwick Rule of Weak Sustainability*

- Constant global population: global consumption should not decline. This is possible,
  - if substitution between resources  $R$  and Capital  $K$  is easy, or the elasticity of substitution  $\sigma_{R,K} \geq 1$
  - if the resource rent is reinvested in physical capital.
- Population growth: per capita global consumption should not decline. This is possible
  - If, in addition, the rate of technical progress exceeds the rate of population growth.

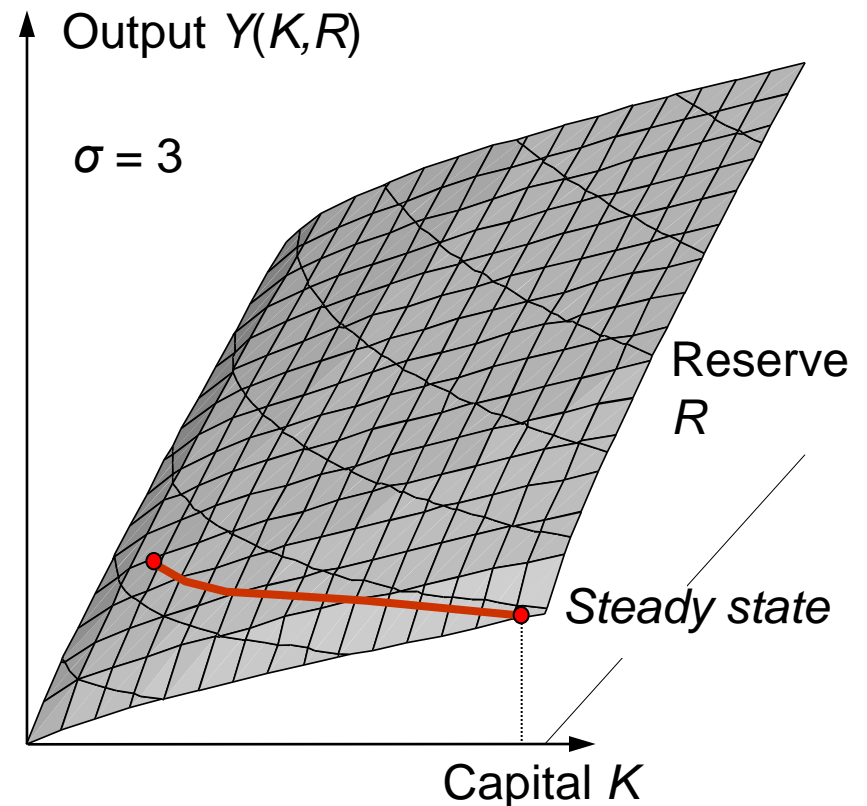
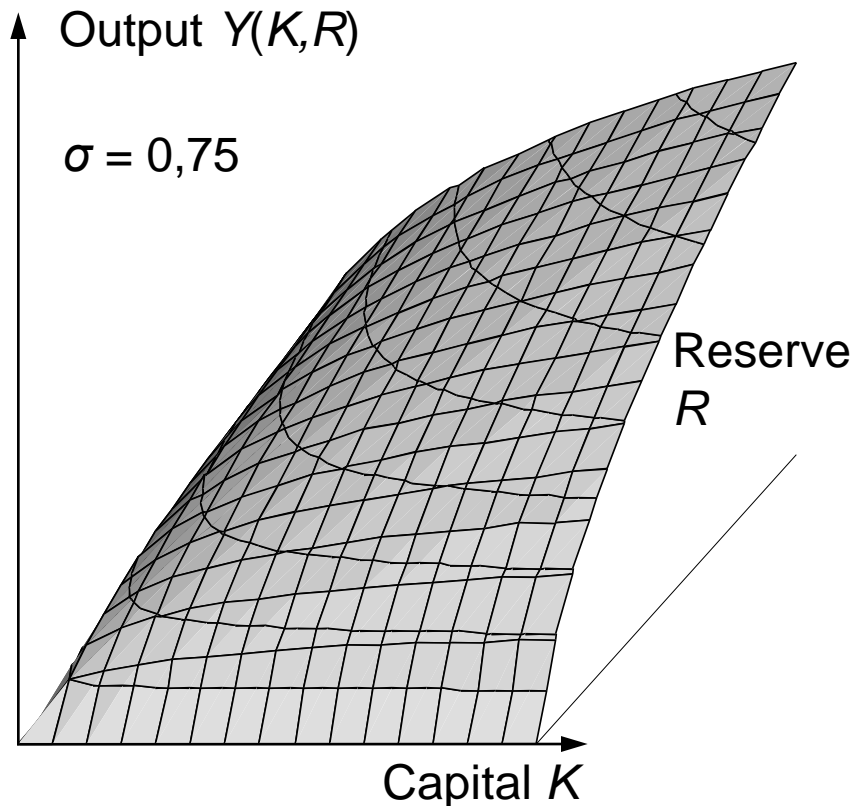
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Solow, R. (1996) On the intergenerational allocation of natural resources.  
*Scandinavian Journal of Economics* 88, 141-149

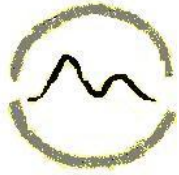


7

## Cobb-Douglas Production Function $Y(K,R)$



“Elasticity of substitution” is a local property of the production function. Weak sustainability depends on more general properties.

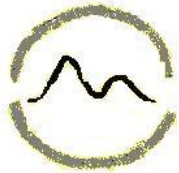


8

## Common Sense on “Excess Liquidity”

- No major effect on CPI due to
    - CPI measurement methods (“core inflation”)
    - Globalization effects on the prices of traded goods
    - Strong inflationary trends in non consumer goods markets such as real estate, stocks, commodity markets (see Binswanger 2009)
- 
- Optimally diversified investors must accept higher risks in order to reach interest targets – or need to apply “creative” investment strategies
  - Large inflows of speculative capital into crude oil positions

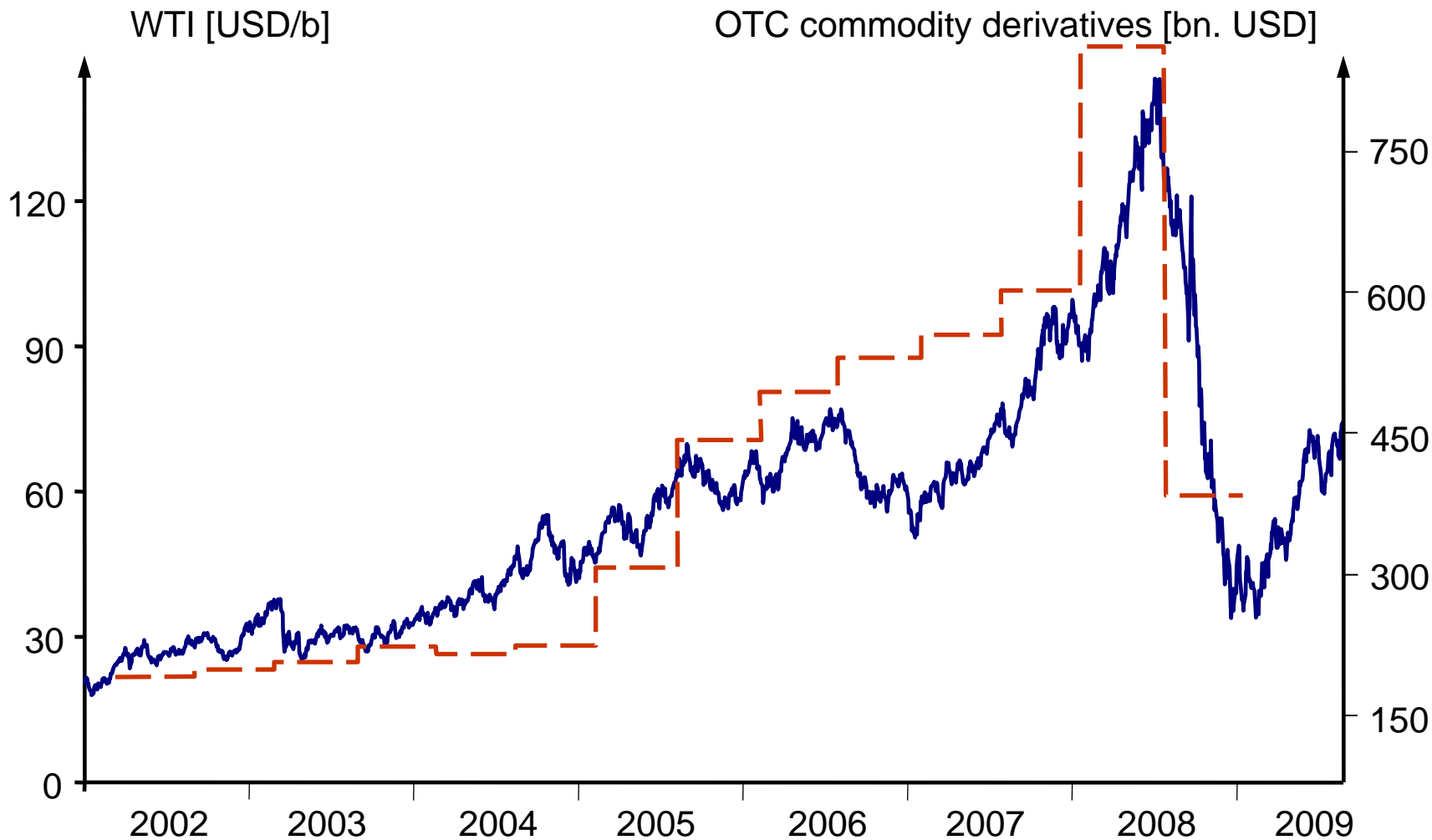
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Binswanger, H.C. (2009) Gastkommentar. *Financial Times Deutschland* (16.8.2009)

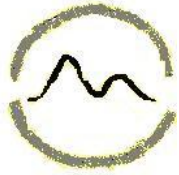


9

# Open Positions on OTC Commodity Markets

[Data Source: BIZ, Commerzbank]

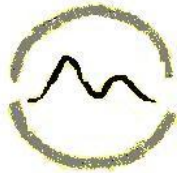




10

## *Excess Liquidity and the Oil Market*

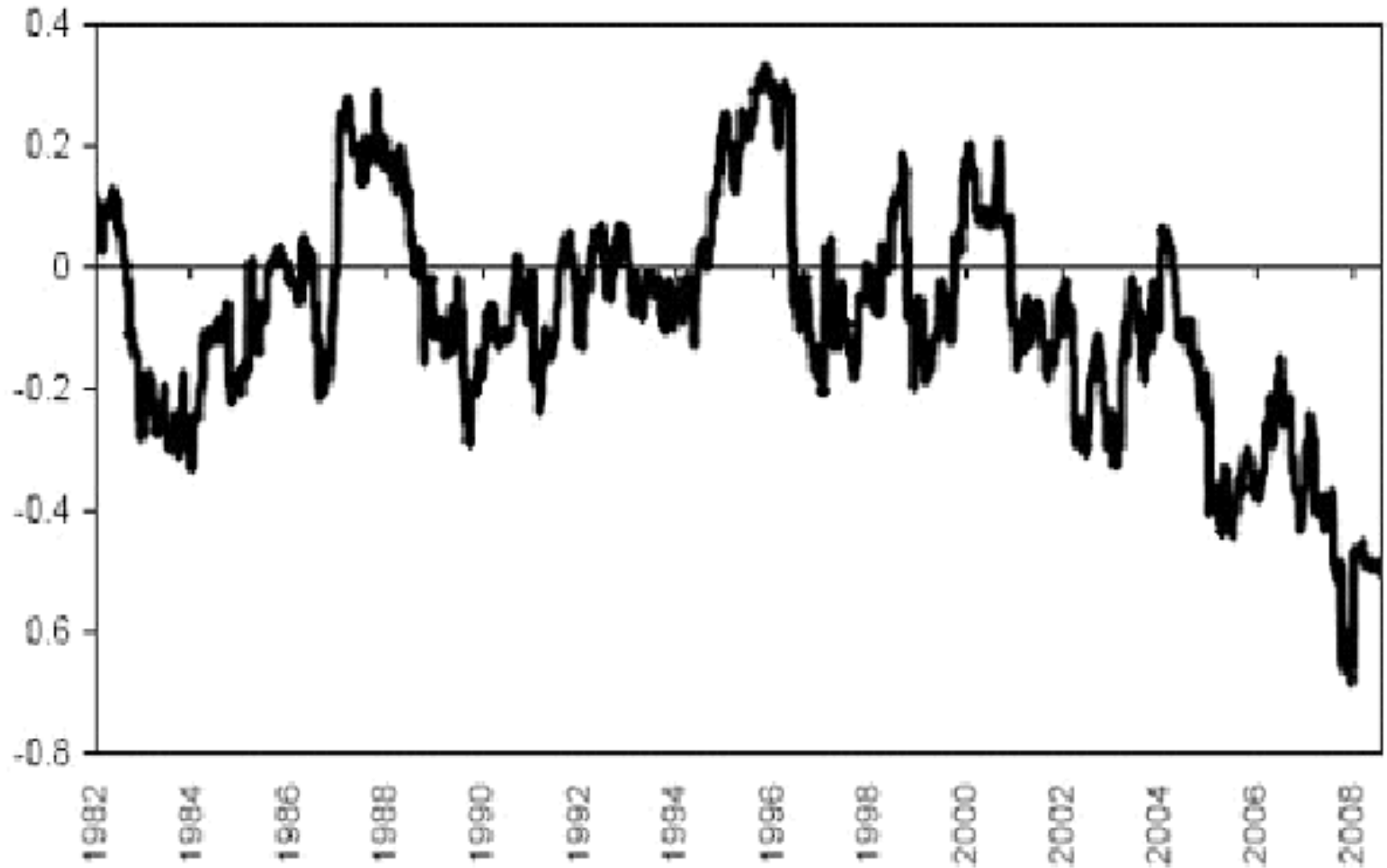
- Depending on the source, capital inflow estimated to be 250 - 500 bn. USD between 2005 and 2008.
- Reasons
  - OTC Oil contracts as a Dollar hedge
  - Profitable rolling strategies
  - Self fulfilling expectations
  - Moral hazard effects.
- The capital inflow represents an additional non-physical oil demand of 3% - 7% of the physical market demand.
- This annual financial demand growth adds to the physical demand growth during that period.

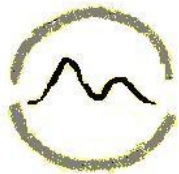


11

## *Correlation Arabian Light and EURO/USD*

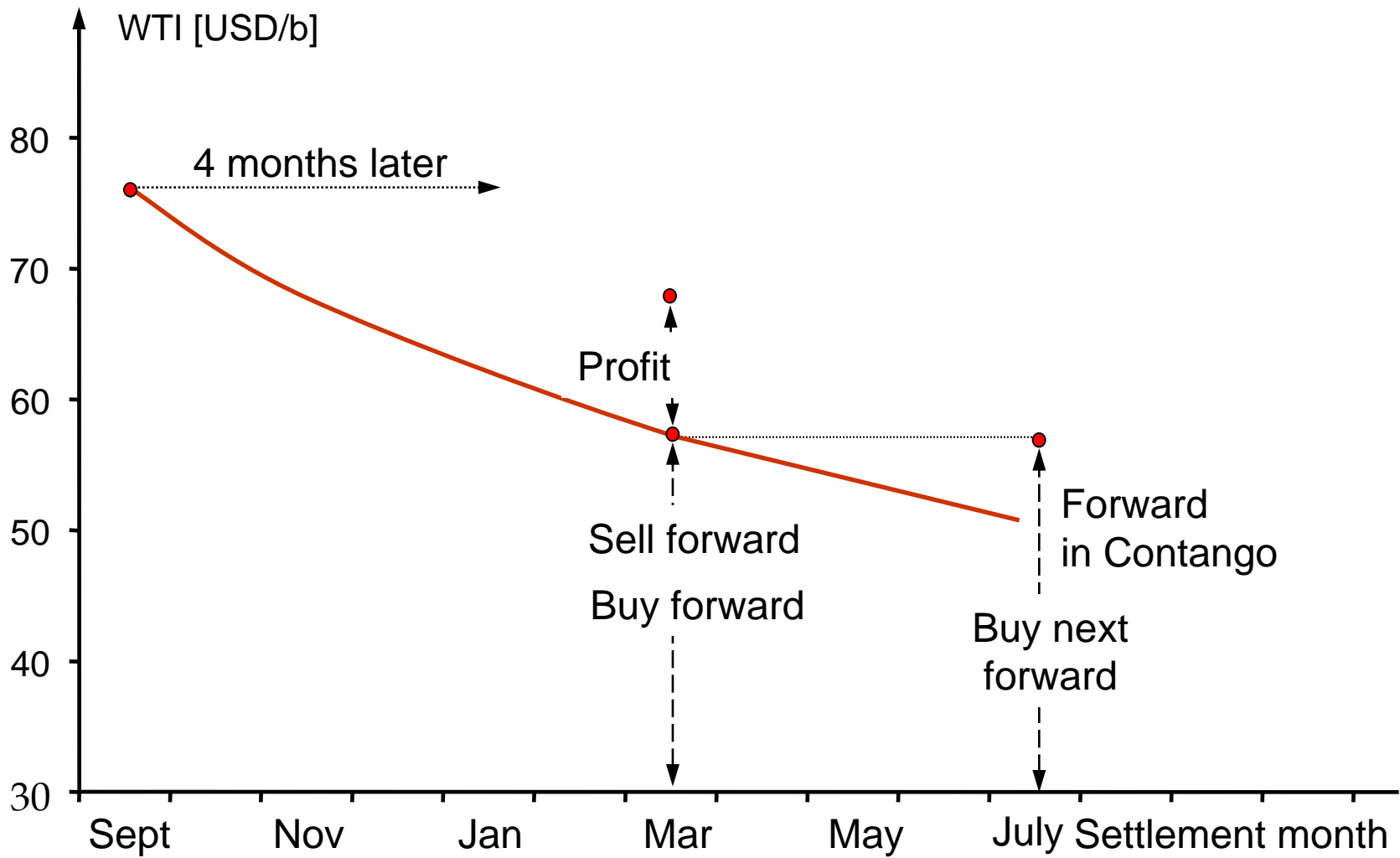
*[Source: Bloomberg, Commerzbank Corporates & Markets 2009]*

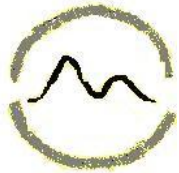




12

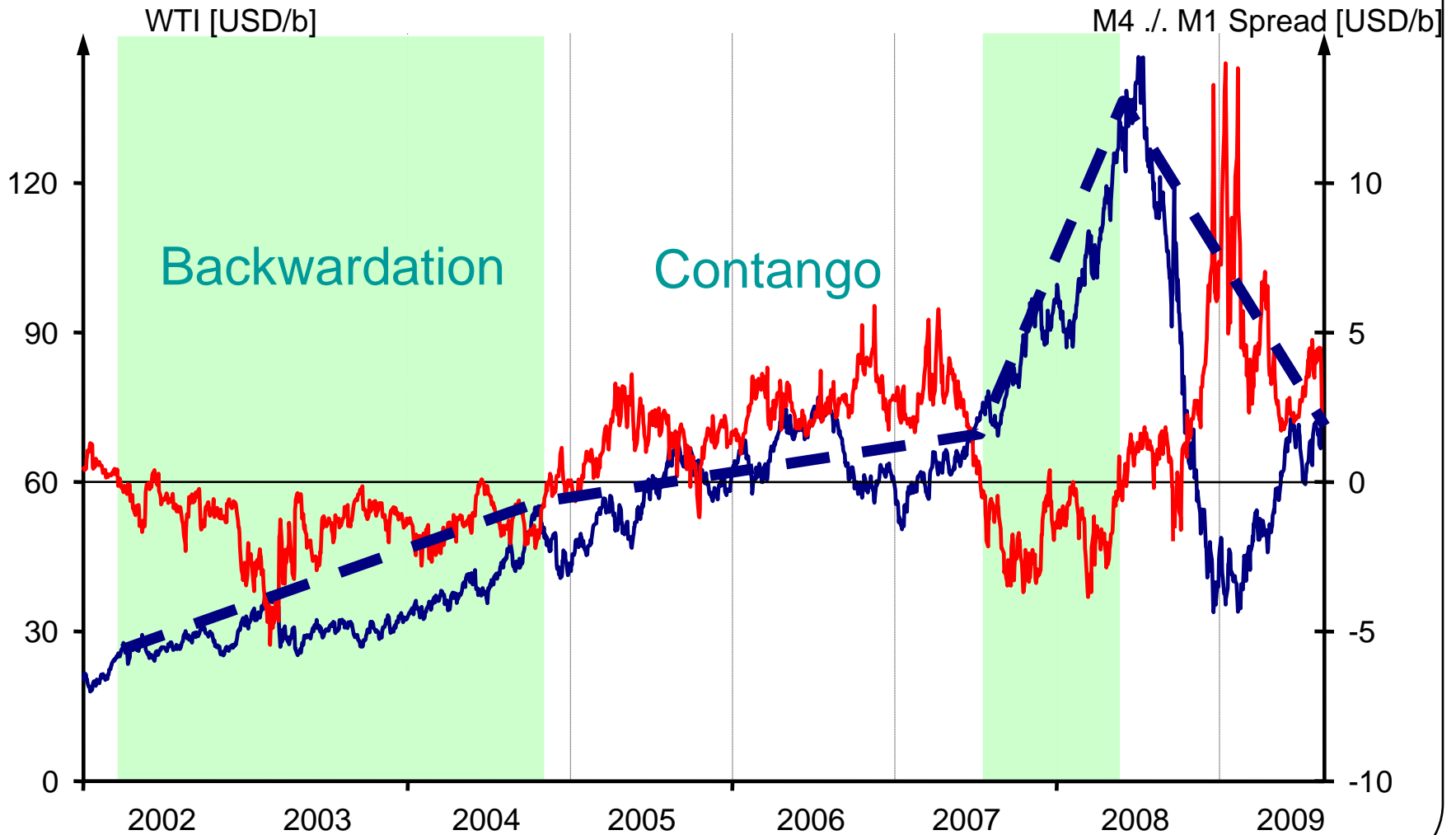
# Hedge Strategy: Rolling of Futures

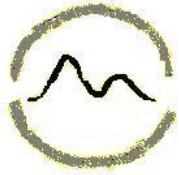




13

# *Oil Prices under Backwardation and Contango*



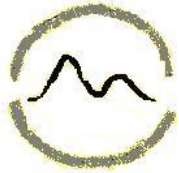


14

## *Bubbles: Self Fulfilling Expectations*

- Trades based on the expectation that markets believe in further price increases (or price decreases). If traders behave according to common expectations, these expectations become true. The “success” attracts more traders.
  - Spare capacities and the “Peak Oil” discussion affects price expectations (compare the “Limits-to-Growth” in the early 1970ies)
  - Goldman Sachs 100 USD/b oil price forecast (2006) and 200,- USD/b forecast (May 2008)
  - Trading based on the technical analysis with astonishing trading success – in contrast to the efficient market theory<sup>1</sup>

<sup>1</sup> FAZ-Net from 21. August 2009: Forecasts become more accurate if the influence of financial markets is reflected in addition to the usual fundamental factors.



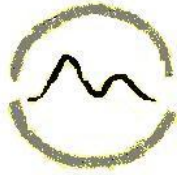
16

## *Some References*

- A recent paper of Belke et al. (2009, p. 24) states: “a high level of global liquidity can generally be seen as a threat to future asset price inflation and financial stability”
- Economist, January 13th 2007, p.61: “Oil is the biggest single component in most commodity indices. Citigroup estimates that, from 2003 onwards, financial flows had pushed up the price of oil by some \$35 per barrel.”

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Belke, A., Bordon, I., Hendricks, T (2009) , Global Liquidity and Commodity Prices – A Cointegrated VAR Approach for OECD Countries. Ruhr University Bochum (ISSN 1864-4872 (online)



17

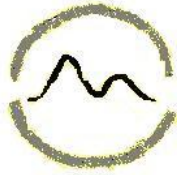
## *Counterargument: Speculation is Harmful*

Anthony de Jasay (2009):

- According to elementary economics, speculators only make money if they buy low and sell high, and thus reduce the amplitude of price changes between trough and peak that would otherwise take place. They act as stabilizers.
- If they buy high and sell low they magnify the amplitude of the changes that would take place without them, they must lose money and if they lose often enough, they must stop de-stabilizing the markets because they have no money left to "speculate" with.
- This should suffice to show that "speculators" either stabilize the price or must self-destruct.

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Anthony de Jasay (2009) The Bootstrap Theory of the Oil Price  
([www.econlib.org/library/Columns/y2008/Jasaybootstrap.html](http://www.econlib.org/library/Columns/y2008/Jasaybootstrap.html))

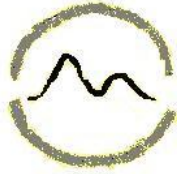


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## *Some Conclusions on Excess Liquidity*

- Excess liquidity stands at the origin of oil price bubbles.
- “Exit strategies” are difficult to implement, particularly by democratic governments and in economically troubled times.
- In July 2009, US administration proposed steps towards OTC market regulation. It will not work as long as the excess liquidity problem is not solved:
  - OTC markets and speculators are needed in order to guarantee market liquidity
  - For regulators it will be difficult if not impossible to distinguish between “normal” and “excess” speculation
  - Financial institutions will lobby for protecting their revenue streams (35 bn. USD in the first half of 2009).





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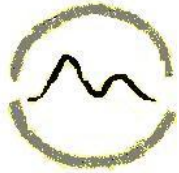
## *Lesson learned*

### High oil prices

- more liquidity demand  
(depending on the use of the resource rents)
- lower interest rates  
(depending on central banks)
- more demand for “creative” speculation
- Capital inflow into oil markets likely
- Further oil price increase likely

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High oil prices tend to destabilize the world economy



## *Conclusions on the Sustainable Oil Price*

- If financially sustainable, oil prices need be cointegrated with finding and lifting costs (as far as most of the resource rent flows into SWFs and foreign currency reserves).

But then the oil market is not sustainable from a resource economics point of view.

- If sustainable under a resource economics point of view, the oil price should, over time, move away from the finding and lifting costs (Hotelling rule).

But then financial sustainability is at stake, if the corresponding resource rent is invested in financial assets.

- Given today's CPI level, 200,- USD/b is no sustainable oil price level.