

# IV Congreso Boliviano de Gas y Energia

## **NATURAL GAS PRICING: DRIVERS AND TRENDS**

**Edmar de Almeida**

Energy Economics Group  
Federal University of Rio de Janeiro

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# ENERGY ECONOMICS GROUP

## ● WHO WE ARE

- A research group dedicated to professional and academic research and training in Energy Economics
- Currently the group is formed by 6 professors and about 20 researchers
- We are part of the Institute of Economics of the Federal University of Rio de Janeiro



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# OUTLINE OF THE PRESENTATION

- Introduction
- What were the expectations for NG pricing five years ago?
- Recent evolution of the natural gas pricing
- Can Europe replace the US as the gas-to-gas pricing reference?
- NG pricing in the Southern Cone
- Consequences of the current uncertainties

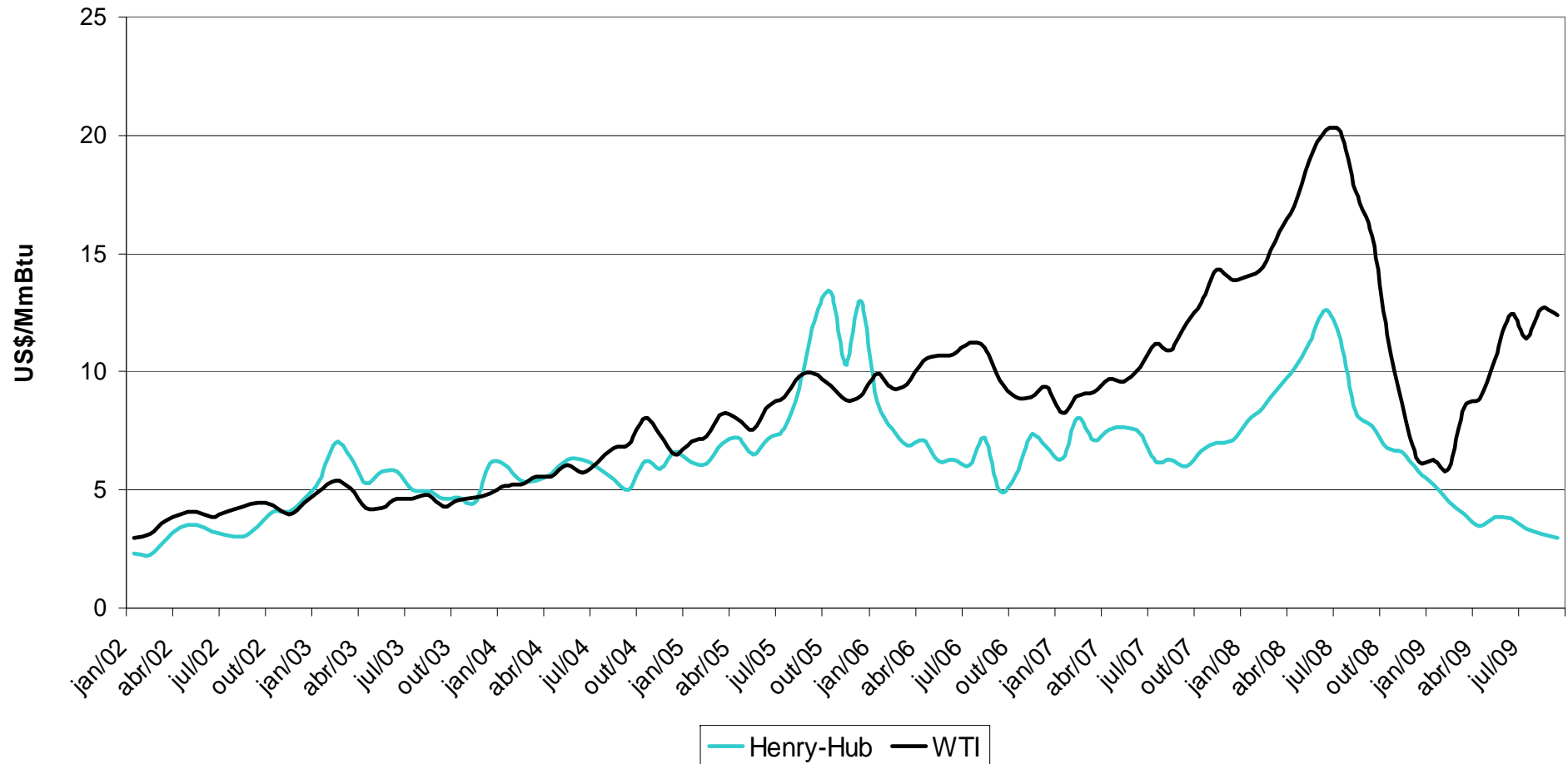
# INTRODUCTION

- Natural gas pricing has traditionally been very much influenced by oil pricing due to:
  - Upstream activities are very much linked to the oil industry
  - Competition with oil products for the end market
- Globalization of natural gas market → freedom from oil industry
  - LNG: the globalization vector
  - Gas-to-gas competition → independent pricing mechanisms
  - Gas price reference for international trade
- Is natural gas globalization possible without the US?

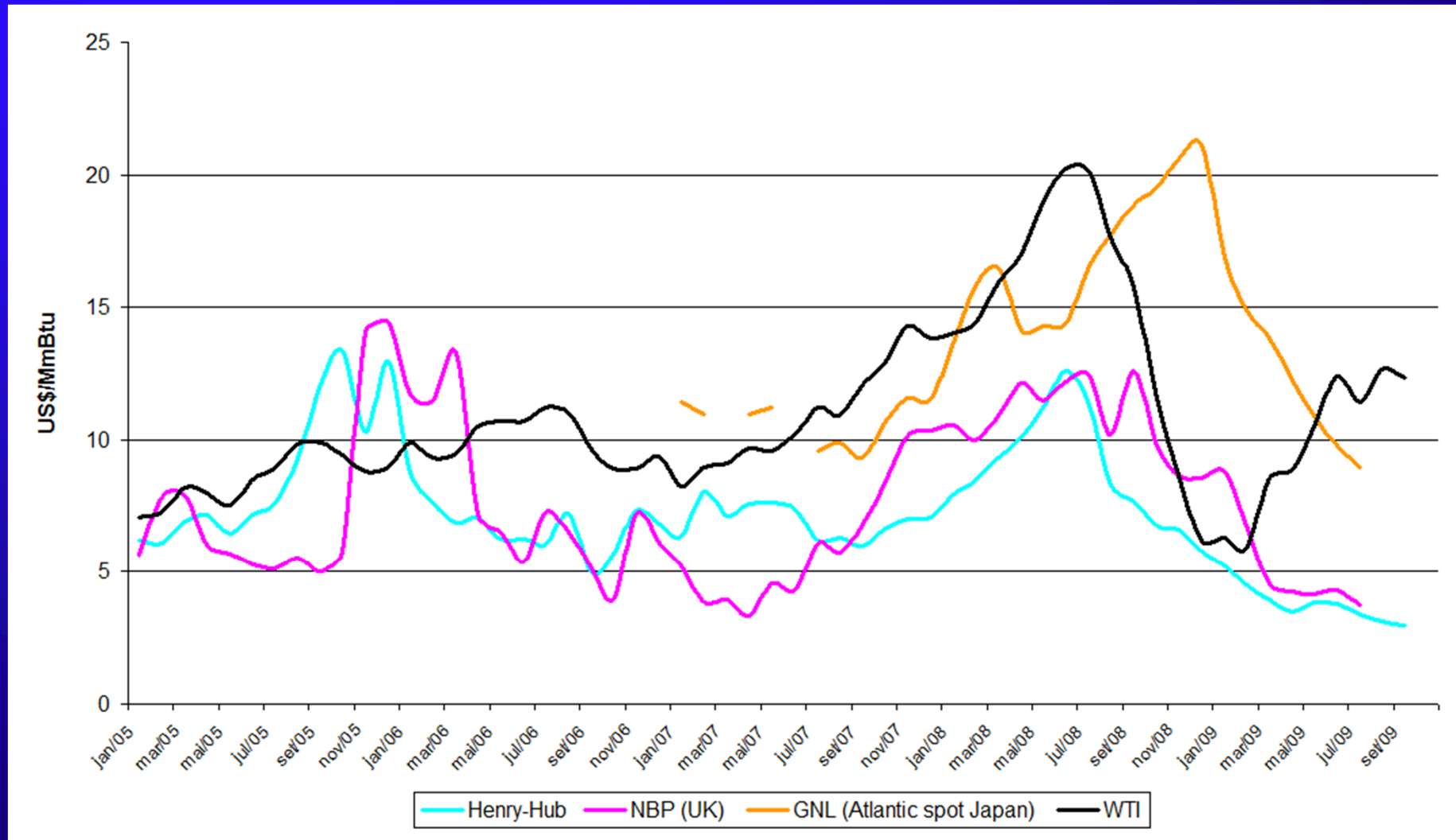
# WHAT WERE THE EXPECTATIONS FOR NG PRICING 5 YEARS AGO

- Prof. Dr. Christian von Hirschhausen (Flame 2005)
  - *“Globalization of natural gas markets is likely to lead to price convergence, future European gas prices may be set at the Henry Hub*
  - *The first Interconnector has lead to full convergence between the prices at NBP and Zeebrugge”*
- Henry Hub would be a growing reference for the LNG international trade:
  - American LNG imports would export the Henry Hub reference
  - Several international contracts outside the US used HH as a price reference
  - Lots of contracts were signed assuming a convergence between HH and NBP

# NATURAL GAS PRICE IN THE INTERNATIONAL MARKET (US\$/MMBtu)



# NATURAL GAS PRICE IN THE INTERNATIONAL MARKET (US\$/MMBtu)



Source: Ministry of Mines and Energy – Brazil and Petrobras

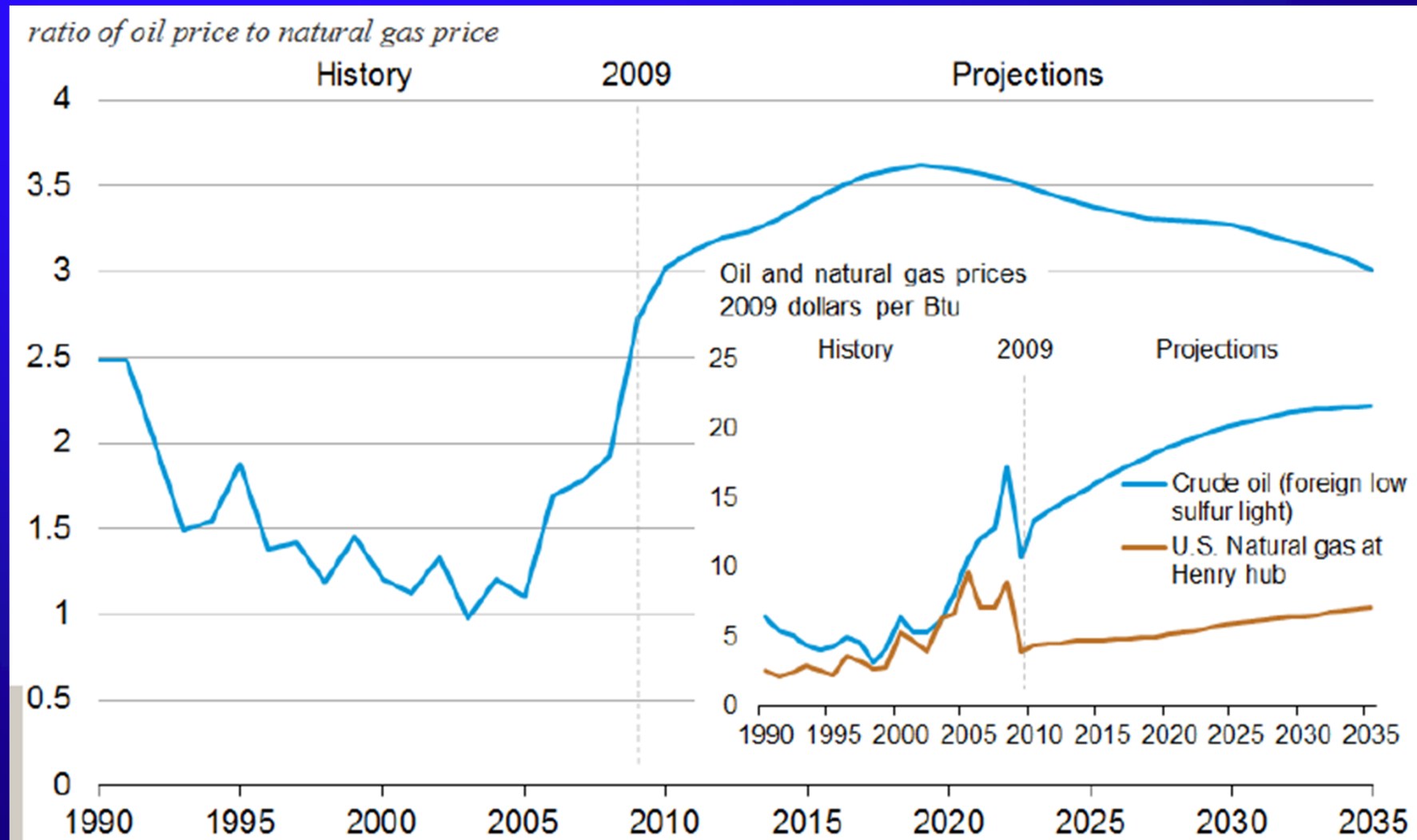
# EVOLUTION OF HH AND NBP PRICES



Fonte: Bloomberg – Abril/2011



# EIA – DOE NATURAL GAS PRICE FORECAST



Source: EIA - DOE

# CAN EUROPE REPLACE THE US AS THE GAS-TO-GAS PRICING REFERENCE? /1

- Differently from the US, Europe will need increasing LNG imports
- Natural Gas Liberalization is complete in UK and is under way in Continental Europe
  - Several hubs and trading centers are developing in the continent. But still on their infancy.
  - NBP trades more gas than all continental hubs combined

# MAIN EUROPEAN NATURAL GAS HUBS



**NBP (1996): National Balancing Point**

- ZEE (2000): Zeebrugge Hub
- TTF (2003): Title Transfer Facility

**NCG (2009): NetConnect Germany**

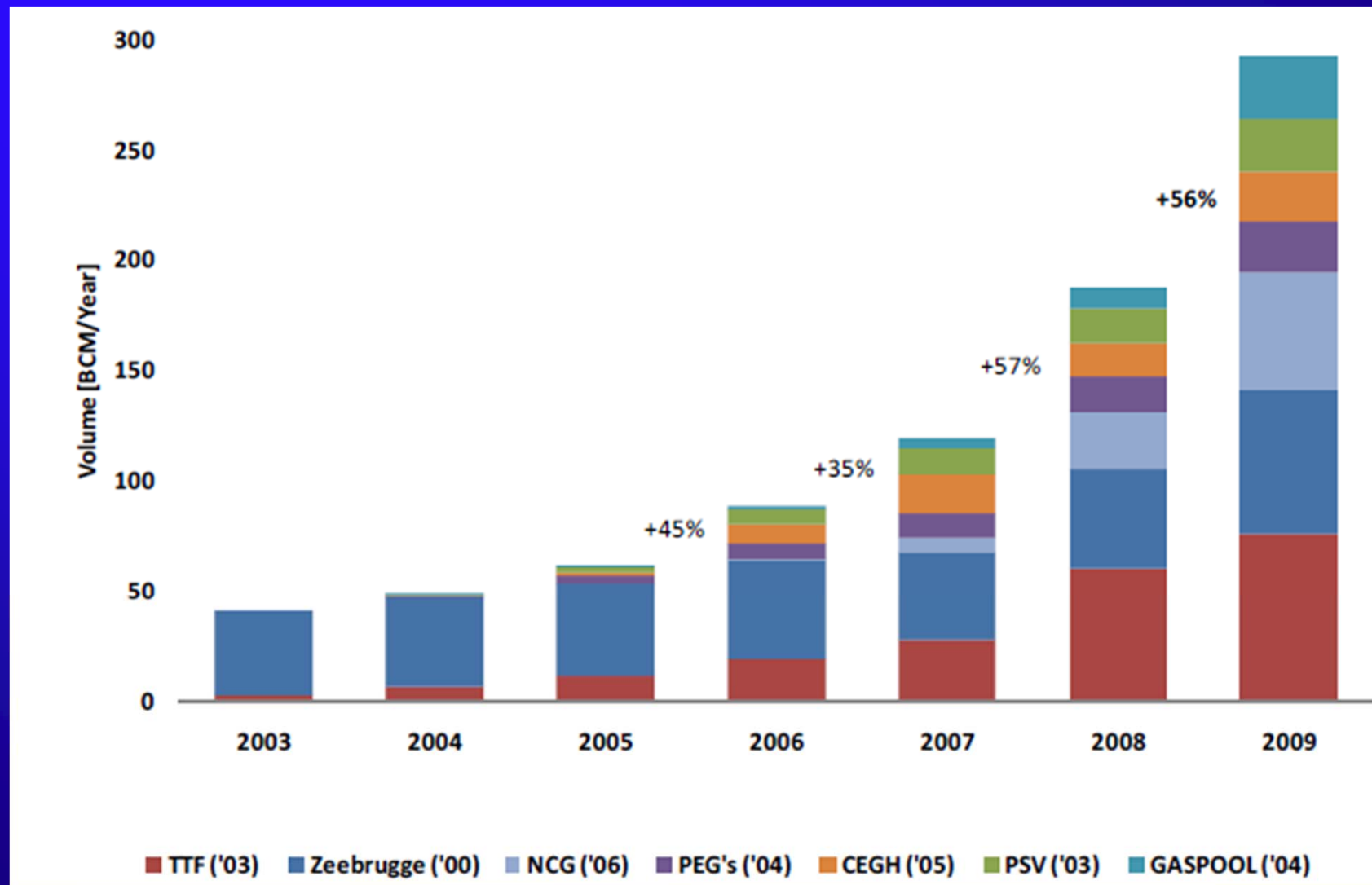
- GPL (2009): Gaspool Balancing Services Hub

**PSV (Italy-2003): Punto di Scambio Virtuale**

- PEGs (2004): Points d'Echange de Gaz
- CEGH (2005): Central European Gas Hub

Source: Stern 2011

# EVOLUTION OF TRADED VOLUMES AT CONTINENTAL EUROPEAN GAS HUBS (2003-2009)



Source: IEA WEO 2010

# CAN EUROPE REPLACE THE US AS THE GAS-TO-GAS PRICING REFERENCE? /1

- What are the challenges to further development of gas-to-gas competition in Continental Europe?
  - Large dependence on gas imports
  - Asymmetric natural gas liberalization process
  - Markets still very concentrated on “national champions” (Edf, GDF-Suez, Eni, Enel, Eon, Rwe, Endesa Iberdrola, Vattenfall)





# CAN EUROPE REPLACE THE US AS THE GAS-TO-GAS PRICING REFERENCE? /2

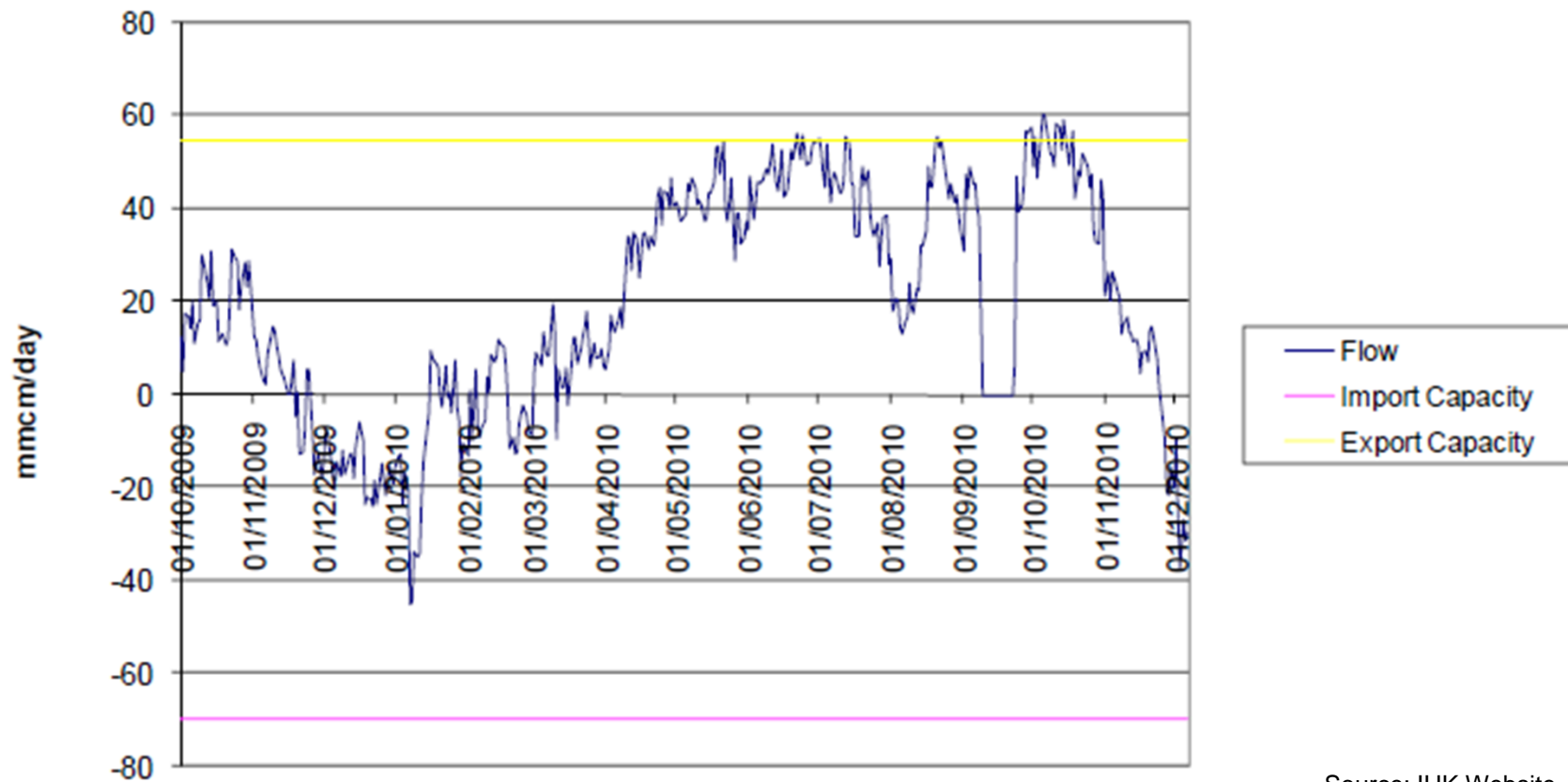
- The Gas Exporting Countries Forum (GECF) supports oil indexing pricing
  - Fear of manipulation
  - Fear of the higher volatility of NBP and other hub prices
- The European Association for Natural Gas Industry (EUROGAS) states that most of their members are willing to maintain oil-linked long-term contracts
  - They want to preserve the relationship with Russia, Algeria and Norway
  - Negotiations are concentrated on the “Price Review Clause”

# CAN EUROPE REPLACE THE US AS THE GAS-TO-GAS PRICING REFERENCE? /3

- In the long term, European gas hub prices tend to converge to the oil price
  - Flexibility on the oil-linked contracts allows for arbitrage between NBP and the oil price
  - Infrastructure improvements are allowing bidirectional gas flows (east-west and west-east)
- Gas-to-gas competition does not always mean cheap gas:
  - Lower hub prices reflects the situation of an oversupplied market in Europe
  - As the spare capacity reduces in the LNG industry, hub prices can be higher than oil-linked gas.

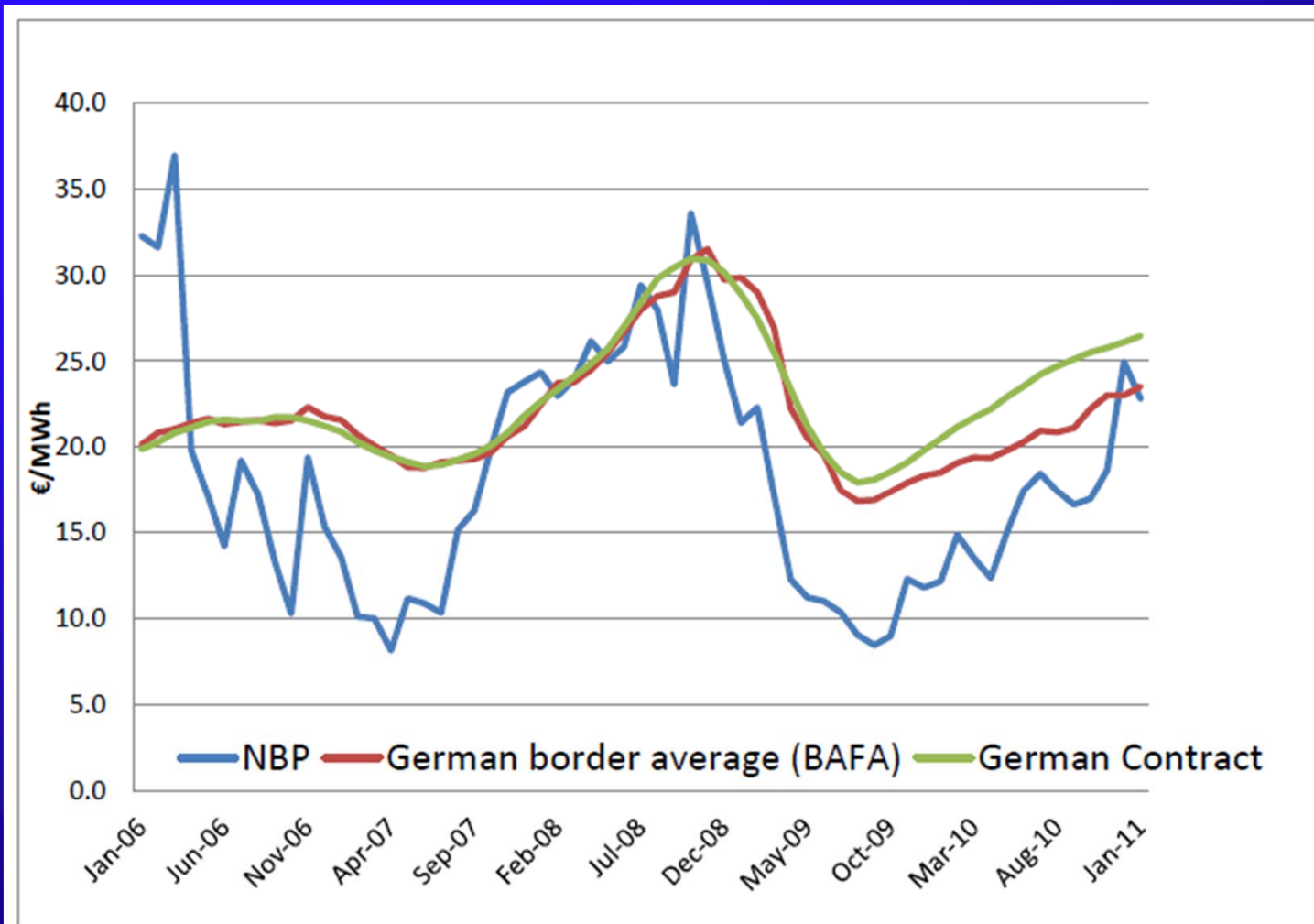


# BACTON – ZEEBRUGGE INTERCONNECTOR FLOWS OCTOBER 2009 – OCTOBER 2010



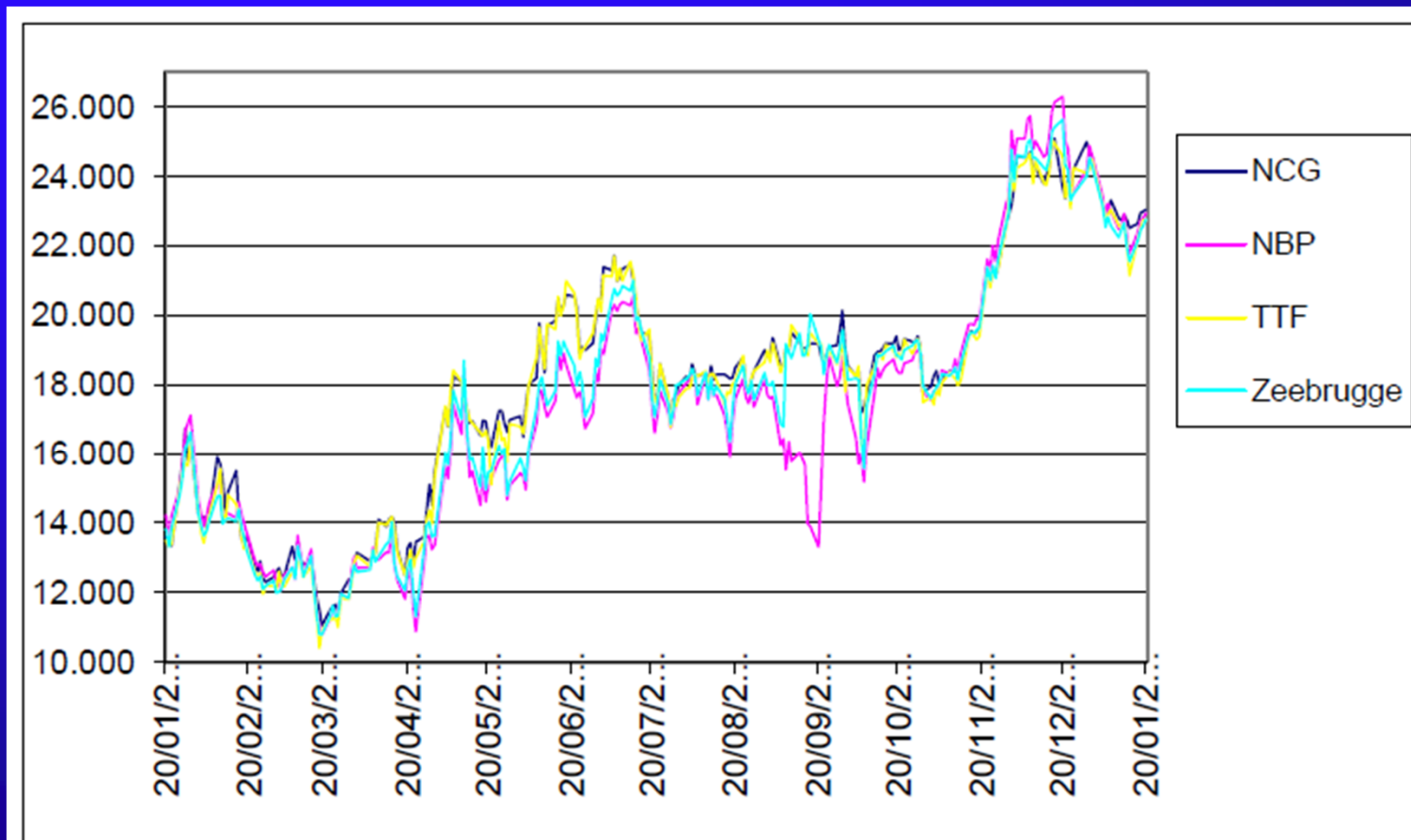
Source: IUK Website

# GERMAN OIL-LINKED CONTRACT AND BORDER PRICES AND NBP PRICES (EURO/MWH)



Source: Howard Rogers, OIES

# DAY AHEAD PRICES FOR NBP, NCG, TTF AND ZEEBRUGGE, JAN 2010-JAN 2011 (Euro/MWh)

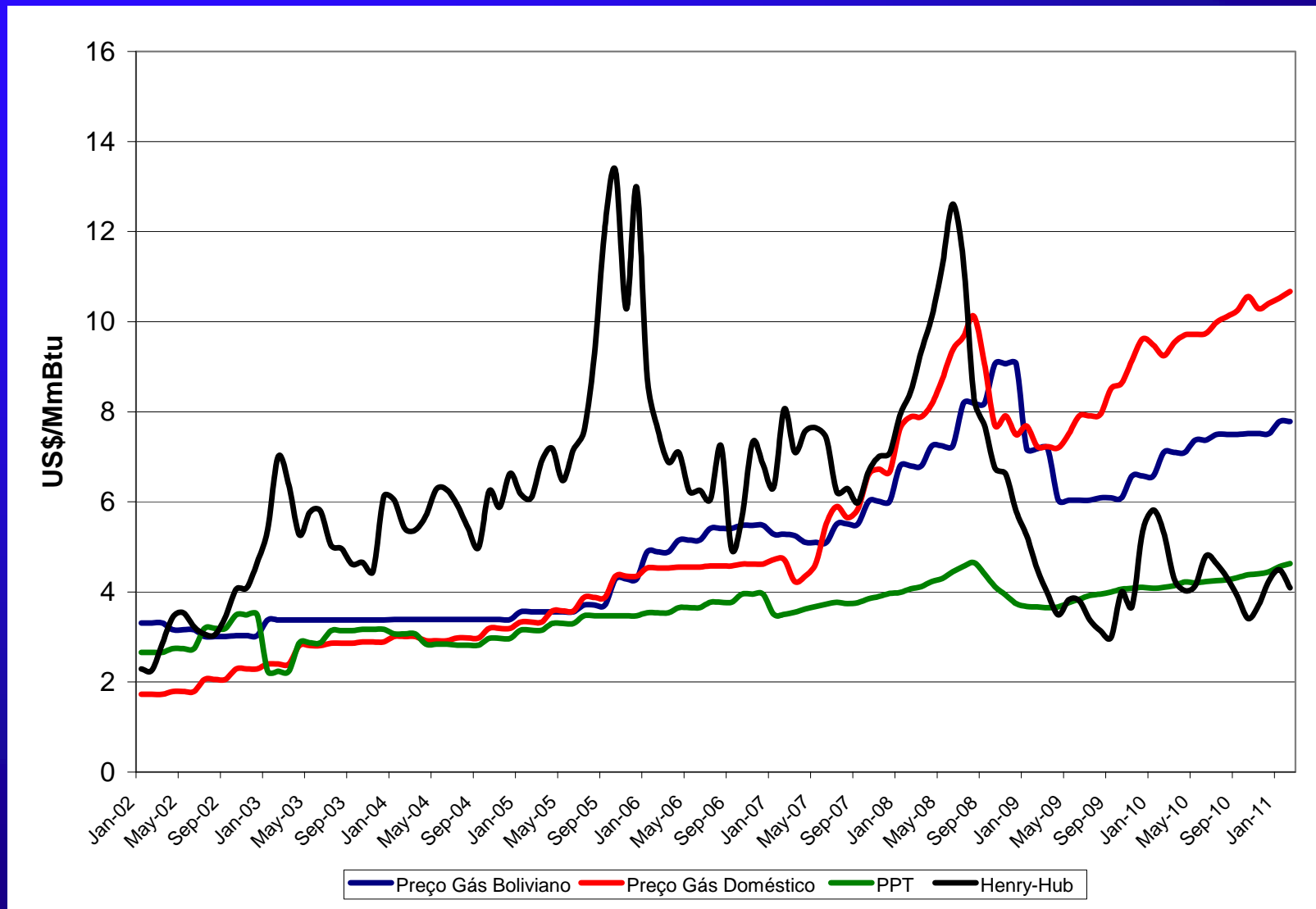


Source: ICIS-Heren, Figure 7, p.32.

# NG PRICING IN THE SOUTHERN CONE

- The failed transition from Oil linked contracts to Henry Hub
  - Petrobras contract to new thermal Power plants in Brazil
  - Henry hub is now the price reference to calculate the variable costs for the thermal power plants in Brazil
  - Peruvian long term LNG contract to Mexico

# EVOLUTION OF NATURAL GAS PRICES: HENRY HUB AND BRAZIL



## CONCLUDING REMARKS

- The uncertainty on NG prices is expected to persist
- Independence of natural gas market from oil prices still far in the horizon
- The increasing uncertainty on the GN prices can affect the pace of investment in the gas industry
- Companies and governments have to learn to survive with this uncertain environment
  - Hedging assumes a very strategic role
  - Negotiation should focus on how to share the price risk along the gas chain





**Thank you!**

[Edmar@ie.ufrj.br](mailto:Edmar@ie.ufrj.br)  
[www.gee.ie.ufrj.br](http://www.gee.ie.ufrj.br)