The European CO_2 Emissions Trading Scheme

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Topics

- What is the EU ETS?
- Price formation and behavior
- 2005 Results: Abatement?
- Allocation choices
- Broader implications

The EU ETS (1)

- 25-state multinational CO_2 trading system
- Classic cap-and-trade covering large sources
  - About 45% of EU CO_2 emissions
- Hybrid implementation of Kyoto Protocol
  - Trading and non-trading sectors
  - Decentralized cap within a cap with CDM linkage
- 2005-07 trial period, 2008-12 second period, and post 2012 periods

The EU ETS (2)

- A significant technical and political achievement
  - A notable exception in the European construction
- Two signal accomplishments
  - An effective constraint on CO_2 emissions (10% of global total)
  - Linkage to outside systems, credits

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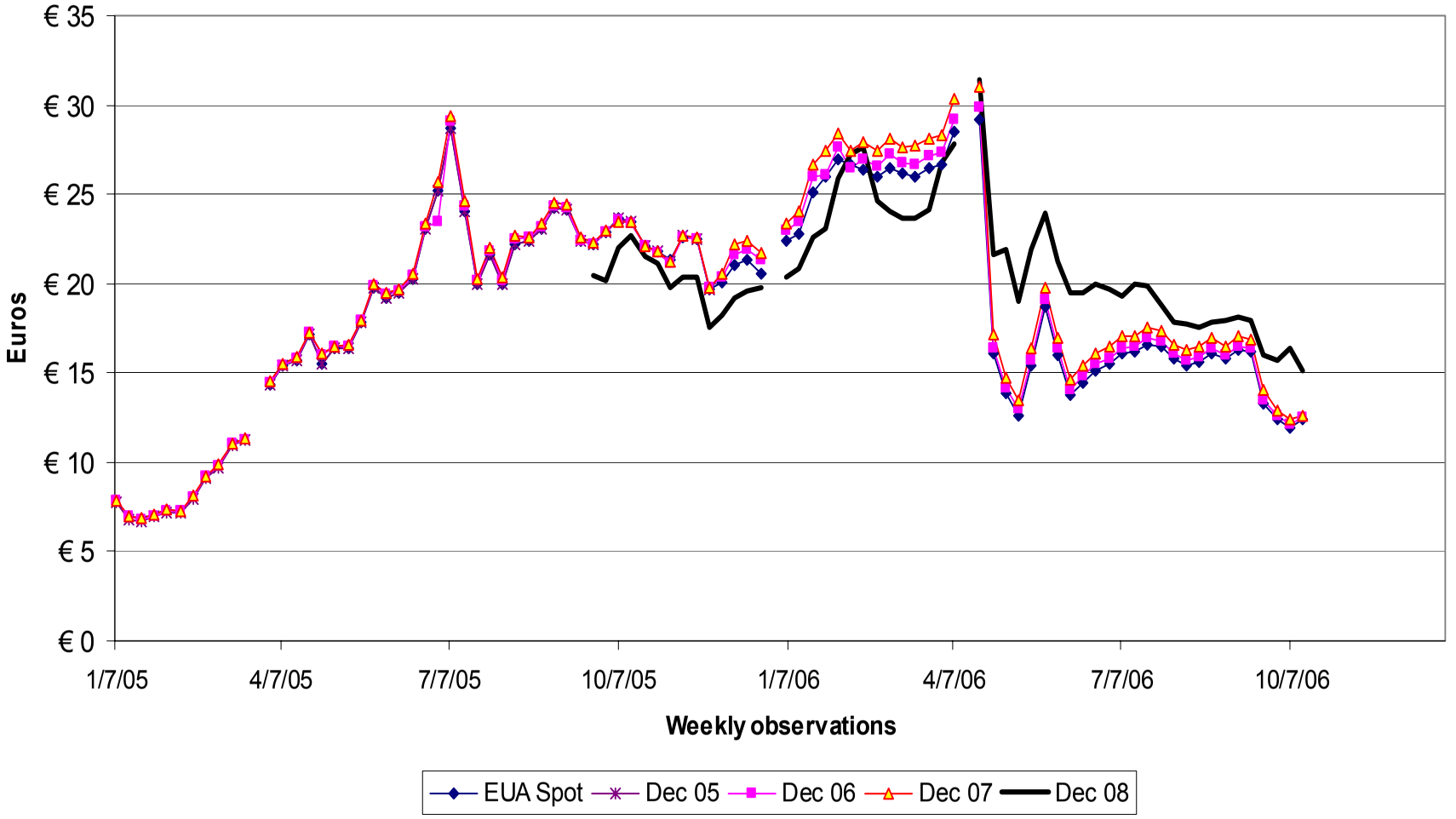
EUA Prices
Jan 05 – Oct 06



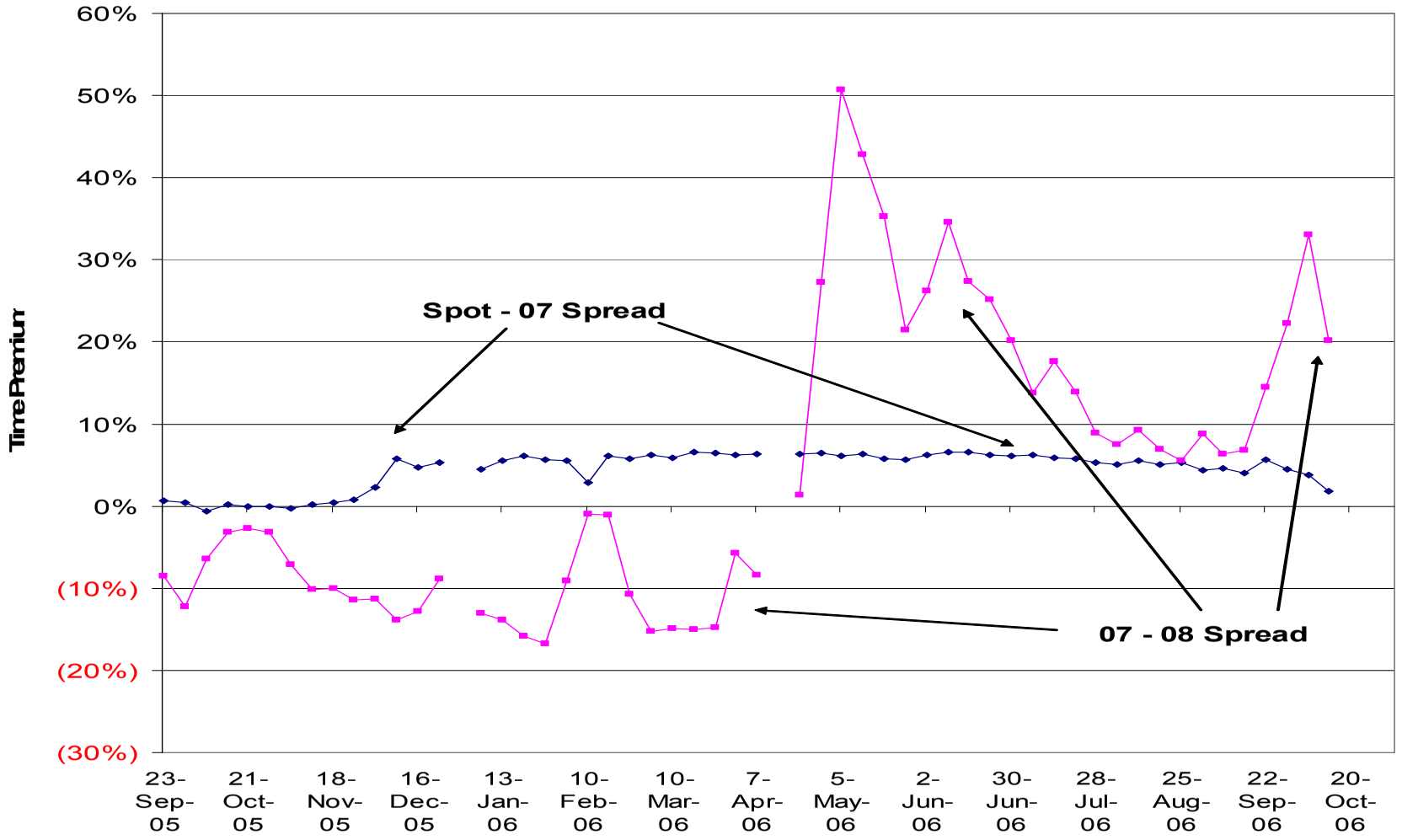
Two Prominent Features

- Higher than expected prices
  - Energy price relations
  - Adverse weather
  - Institutional features
- Sharp adjustment upon revelation of lower than expected emissions
  - All prior information was speculative
- Similar response in US SO_2 program
  - Information & related markets matter

Temporal Trading: An Important Pricing Feature

- Unrestricted intra-period banking and borrowing, but none between periods
- Result is increased price volatility, especially for short 1st period
- Yet, definite tendency for 1st and 2nd period prices to move together
  - Reflects banking of CDM credits, also limited banking in France and Poland

Temporal Restriction Does Affect Prices



Summary on Pricing

- A visible single price throughout the EU
  - Allows equalization of marginal cost and least-cost abatement
- Traded volumes have been significant
  - About 20%, as in early years of SO_2 trading
  - Mostly OTC trading, but also exchanges
- EUA pricing is more rational than not

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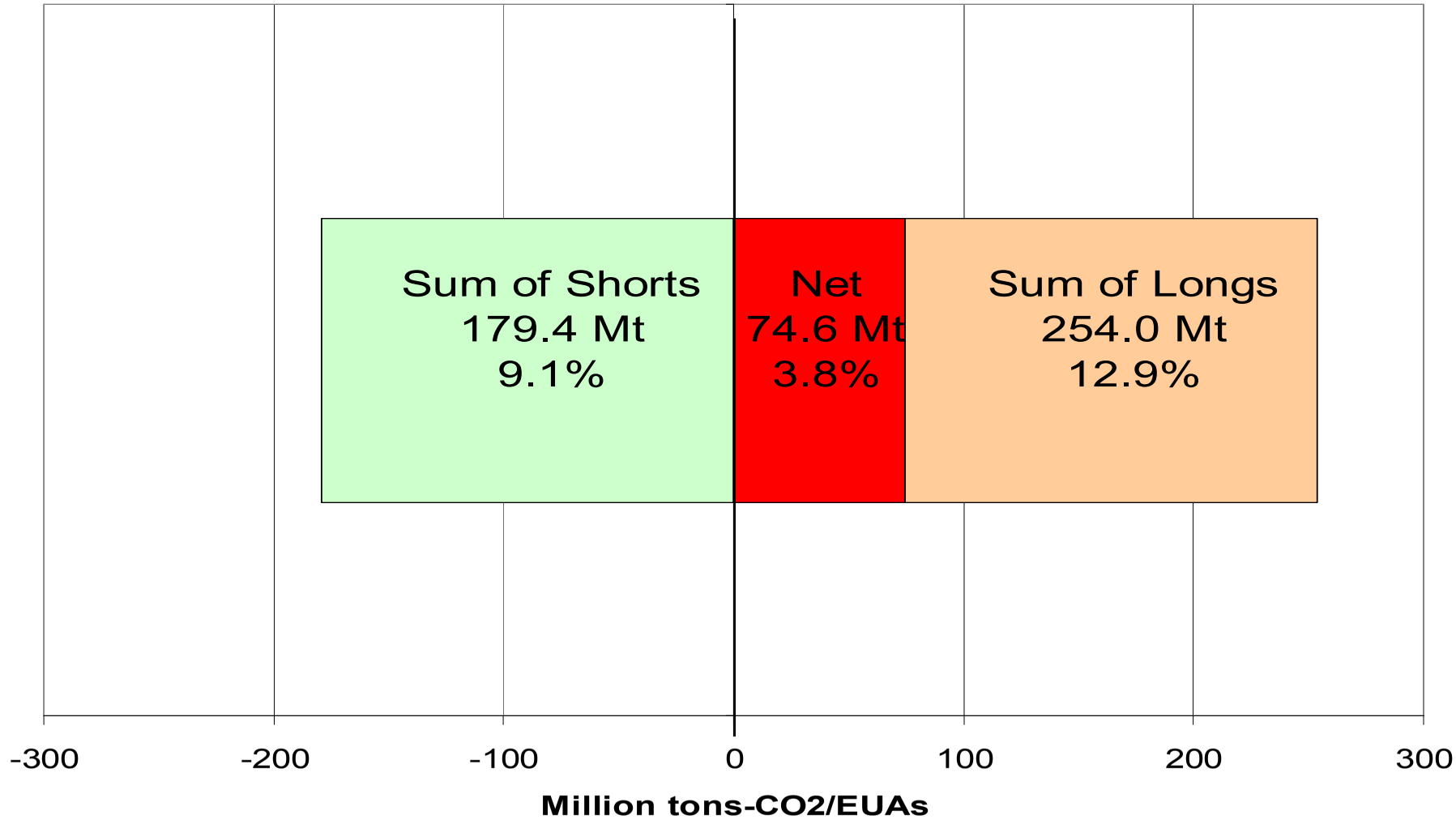
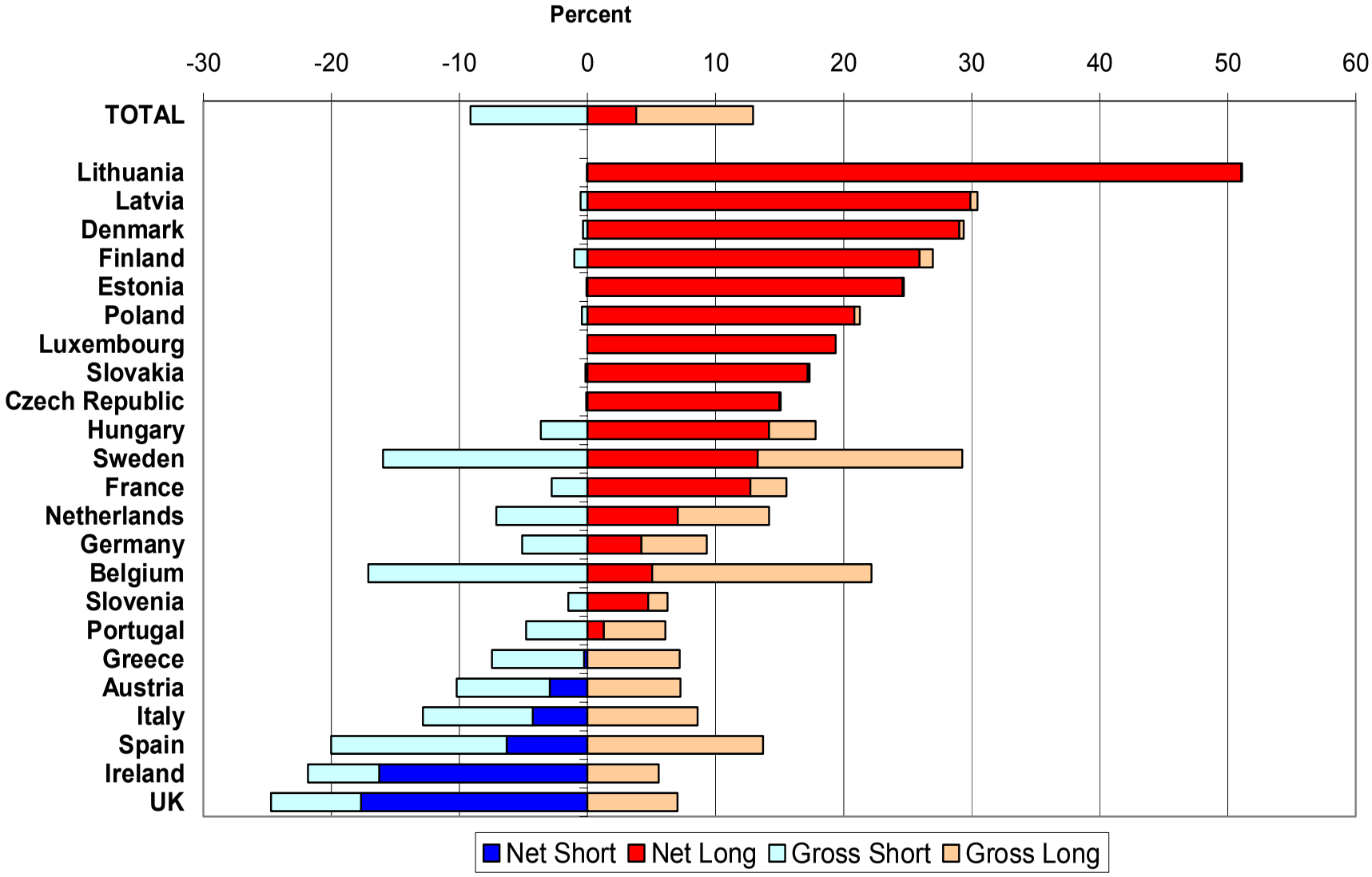
Over-allocation or Abatement?

- 2005 data showed emissions about 75 Mt or 4% less than allowances
- Widely seen as evidence of "over-allocation"
  - But abatement would look the same
  - Never perfectly matched; always longs & shorts
- A look at micro, installation data to judge over-allocation
- And, macro data to evaluate abatement

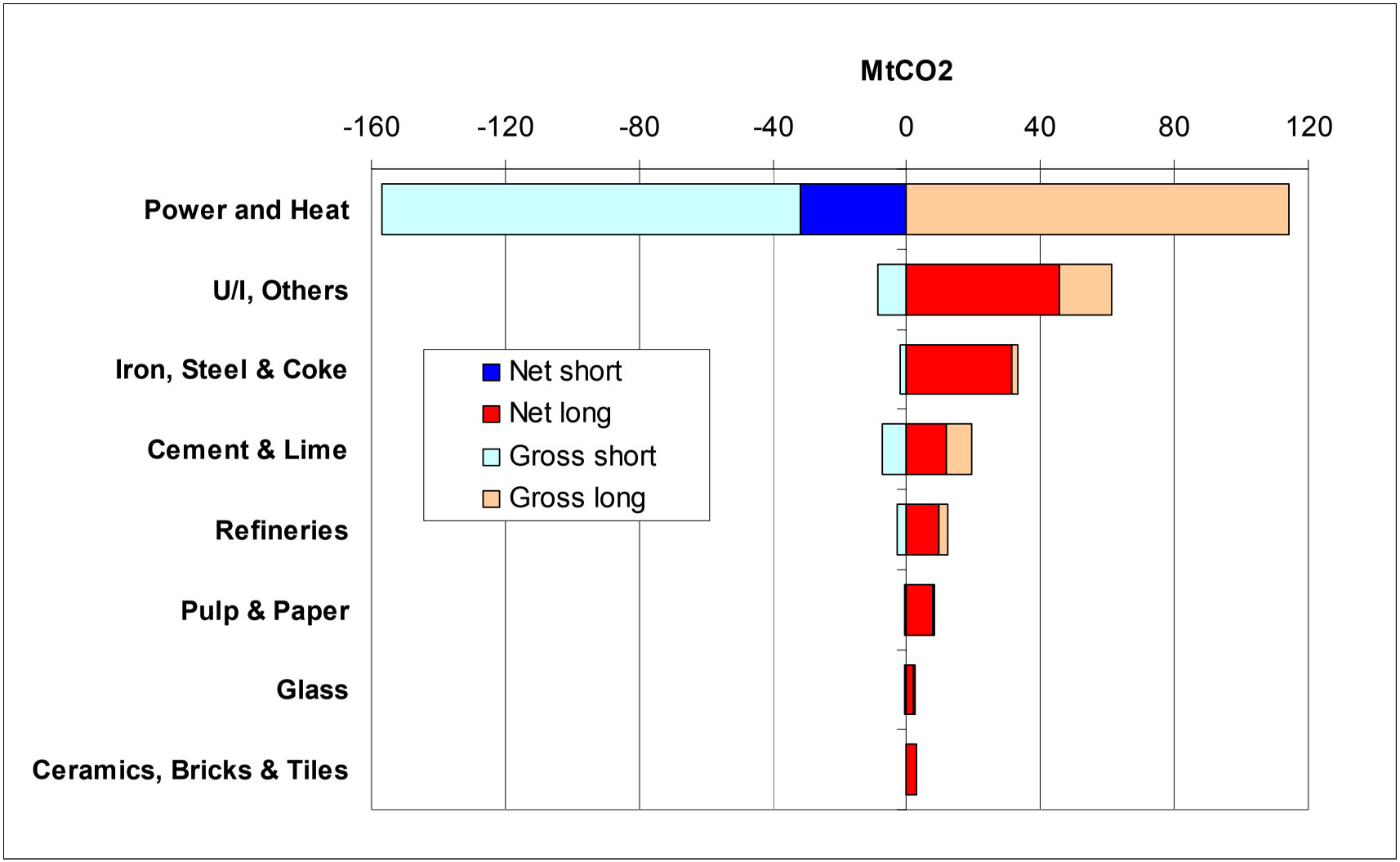
Aggregate EU25 Position, 2005
Sum of shorts, longs, and net



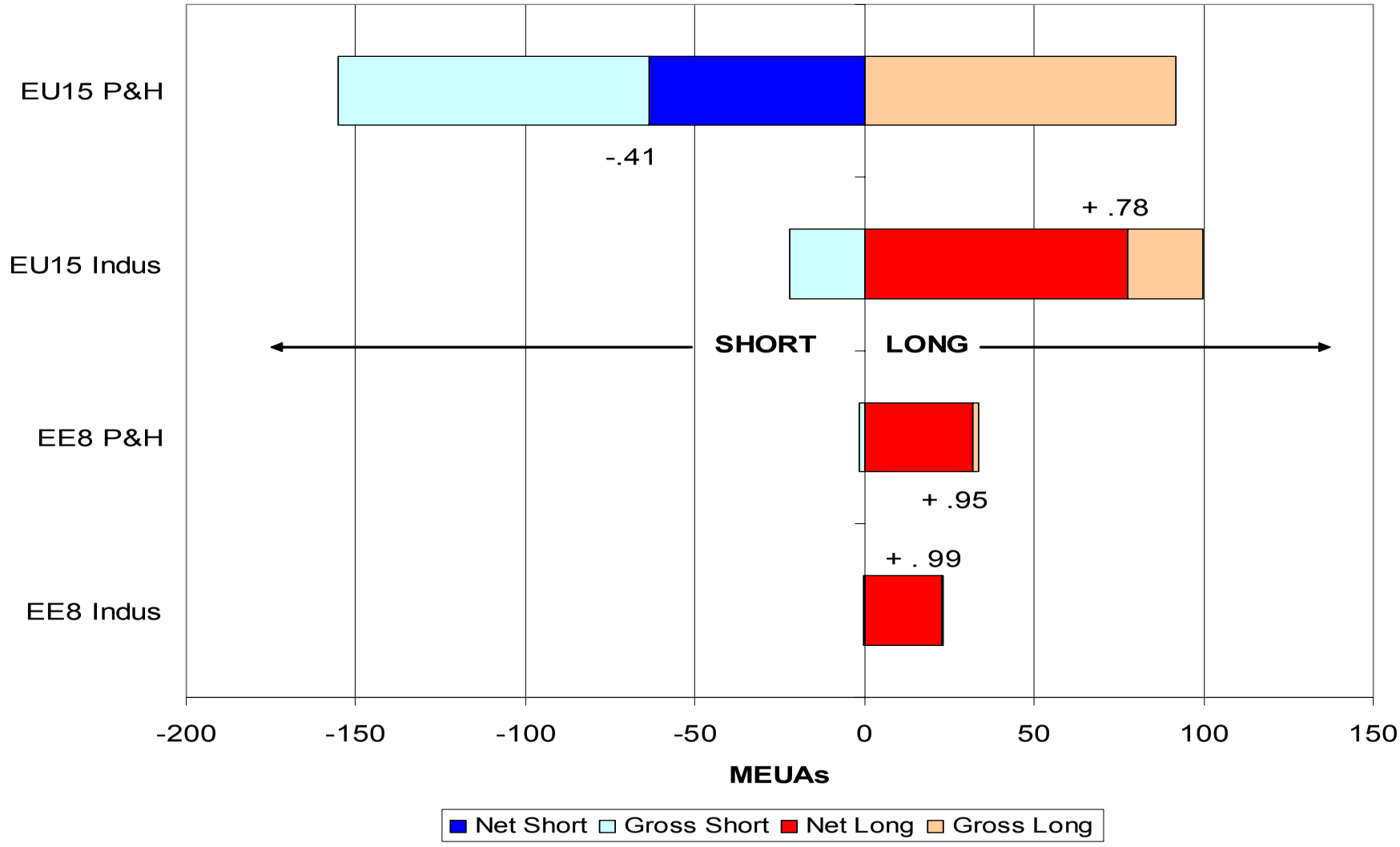
2005 All Member States Short/Long Positions



Short/Long Positions by Sector, EU25 2005



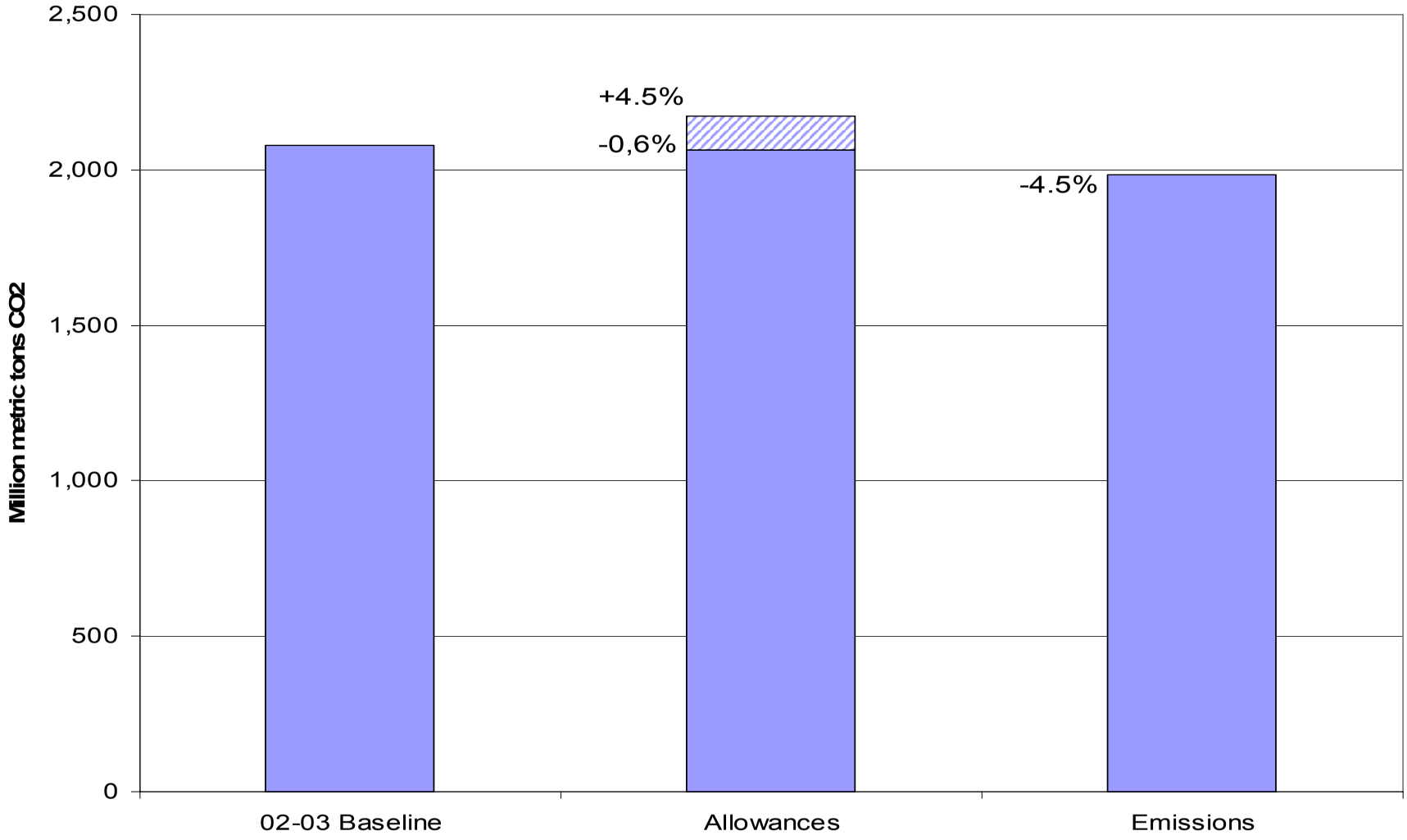
Regional-Sector Breakdown of Short/Long Positions, 2005



A Note on Abatement

- Abatement must be judged relative to an unobserved counterfactual
- Inherently speculative, but good estimates are possible
- Always need some pre-policy historical reference point
- Not available in EU ETS; result of partial cap
- NAP1 baseline estimates have many problems but are the only thing available

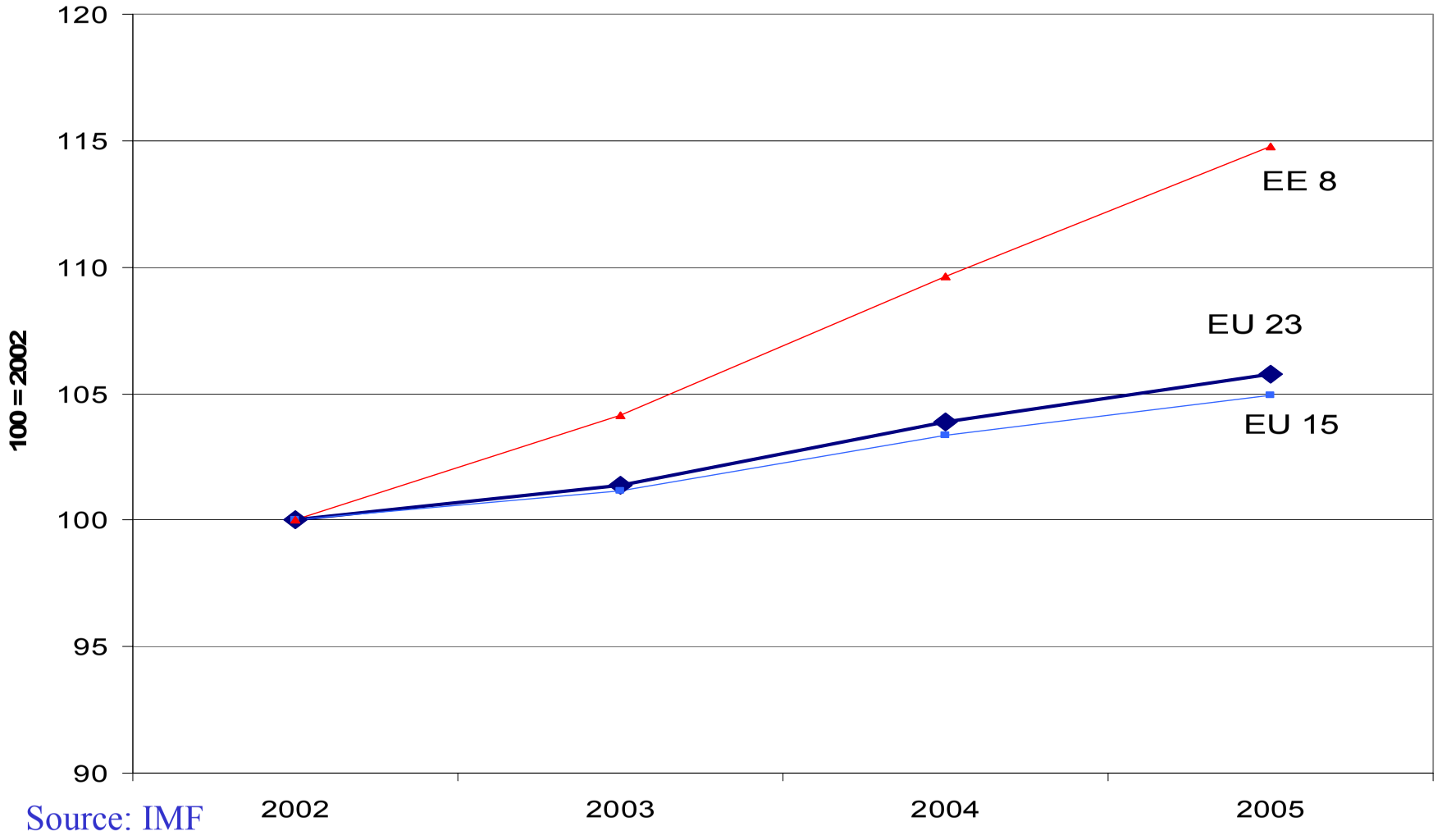
Historic Emissions, Allowances & 2005 Emissions: EU23



Are 2005 BAU Emissions Different from Historical Emissions?

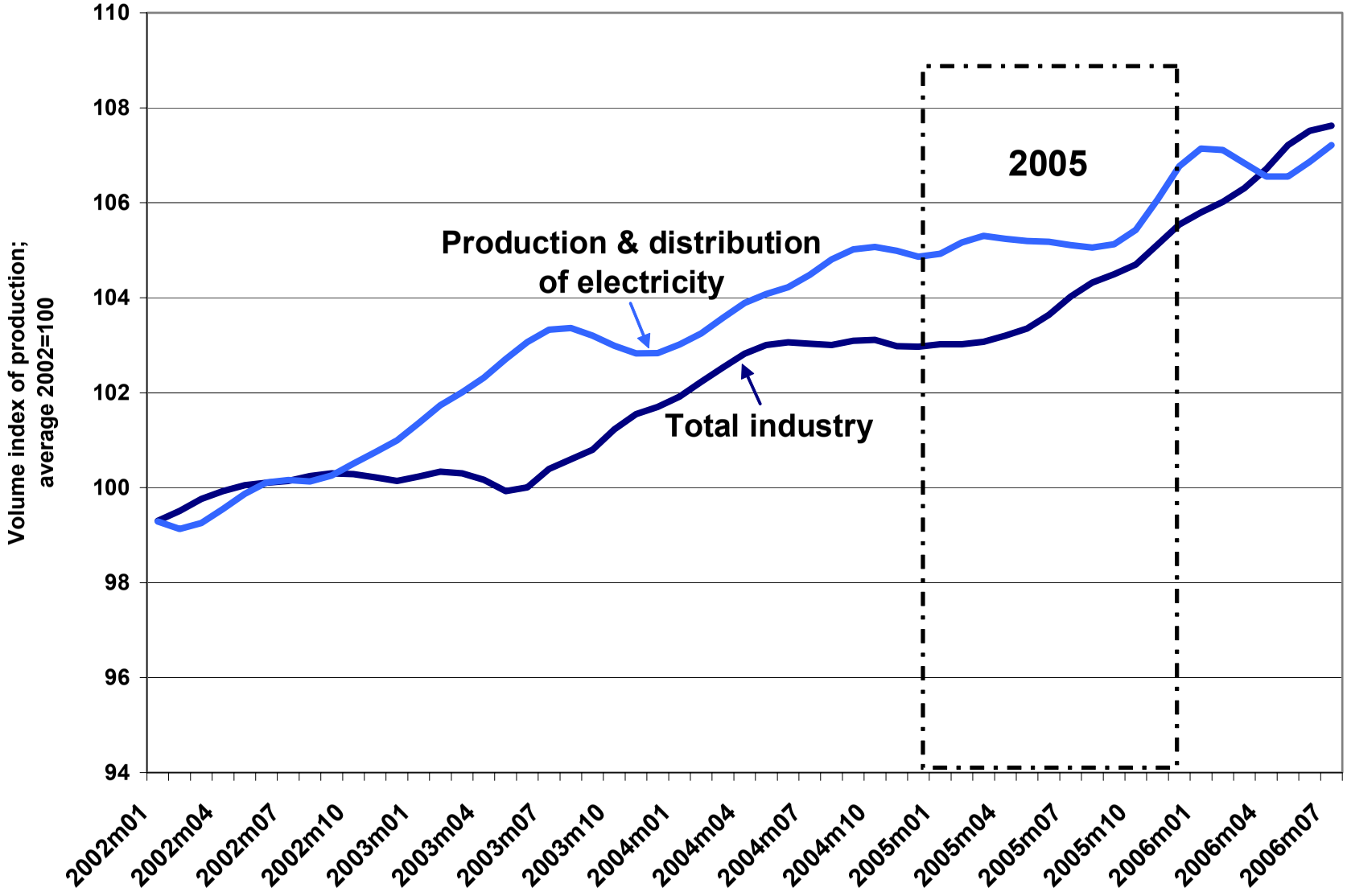
- Economic growth ⇒ +++
- Higher natural gas/oil prices ⇒ +++
- Unfavorable weather conditions ⇒ +++
- Continuing decline in EU15 industry emissions ⇒ ---
- Continuing structural changes in Eastern Europe ⇒ ---

EU 23 GDP Growth
2002 - 2006



Source: IMF

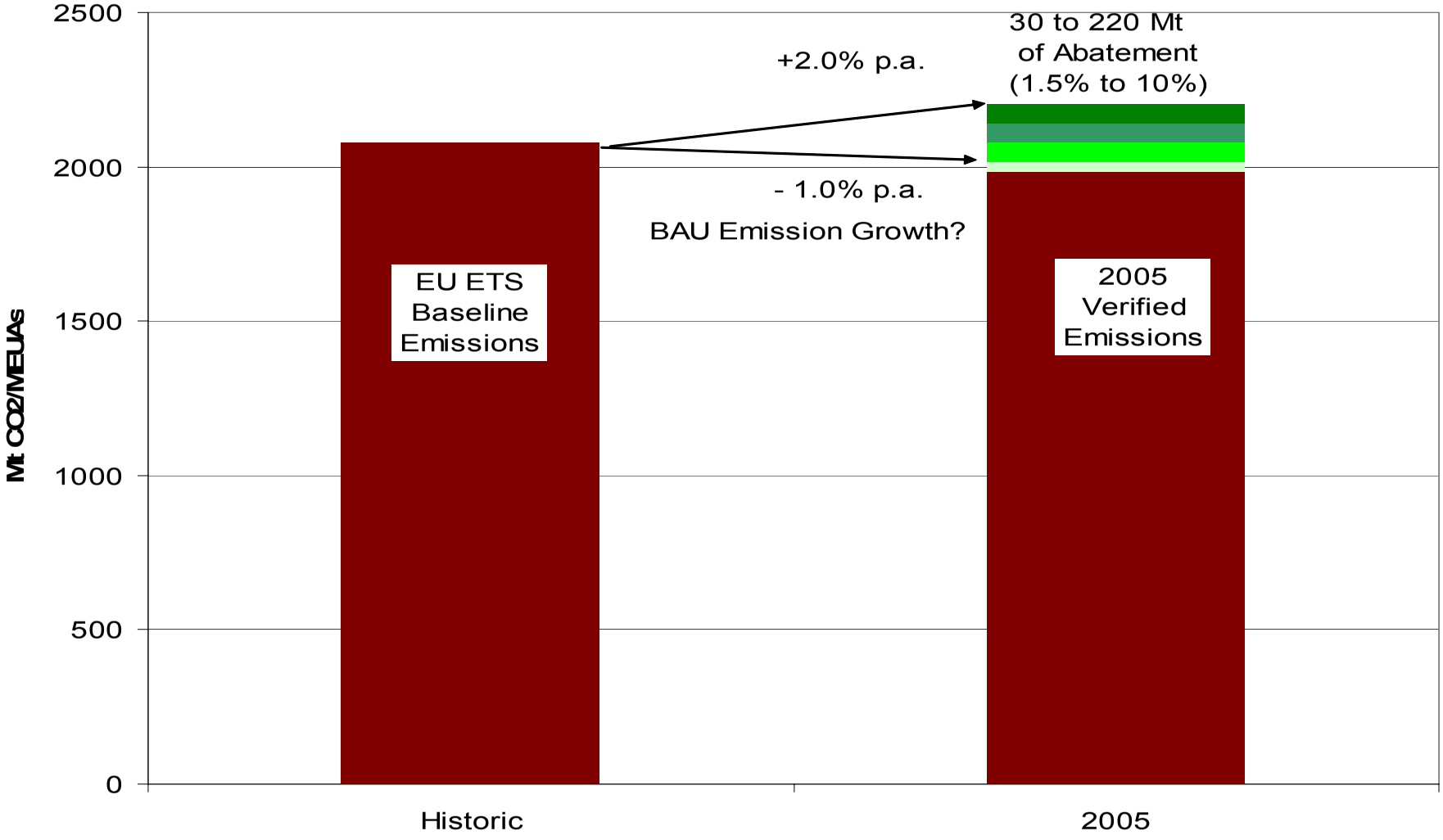
Indicators of EU25 Economic Activity, 2002 - 2006



EU25 CO_2 Intensity Trends (Annual Rates of Change)

	1995-2000	2000-2004
Energy/GDP	-1.9%	-0.5%
CO_2/Energy	-2.8%	-0.7%
CO_2/GDP	-4.7%	-1.2%

What Would BAU Emissions Have Been without the EU ETS?



Summary on Abatement

- The basic case for abatement
  - A significant positive price is being incurred
  - Emissions are lower than historical levels and
  - Economic activity has increased
- Preliminary evaluation would suggest from 1.5% to 10%, perhaps around 5%
- Over-allocation also existed to industry & in Eastern Europe
- Over-allocation affects price, not abatement

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What is Allocation?

- Cap-and-trade systems operate by tradable emission rights or allowances
- These rights must be distributed somehow
  - Auction or grandfathering
- In US SO_2 program, decided by Congress and grandfathered
- In US NOx program, decided by States within Federal budgets and grandfathered

Allocation in the EU ETS

- Delegation to member states to decide total and distribution with ≥ 95% grandfathered
- Member state decisions subject to review by the European Commission
  - In practice, limited to the proposed totals, and
  - No ex post adjustment or quota management
- Huge data problems at installation level
- Extended discussion between industry and government on data and allocation principles

What Choices were Made?

- Allocations based on recent emissions
  - Benchmarking proved infeasible
- Shortage allocated to the power sector
  - More abatement possibilities & no competitive problems
- Very little auctioning (0.13% of total!)
- New entrant and closure provisions
  - Potentially distorting effects but ubiquitous

Principles or Politics?

- Near universal disapproval of grandfathering, yet always chosen
  - Is there more than just politics & lobbying?
- Unacknowledged social norms?
  - Lockean prior use and squatter rights
  - EU variant: production conveys the right
- A convergence of fairness and expediency?
  - Allowances permit Coasian separation of efficiency and equity
  - Assign rights to mitigate financial impact of the change in prices and rules

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The EU ETS as Prototype

- A multinational trading system with a uniform price on carbon throughout the EU
- The east/west parallel to the global north/south divide
  - Differing criteria for EU15 and Accession-10
  - Differing responsibilities for non-covered emissions
- What made all 25 join up?
  - The European idea?
  - Or the benefits of the club?

The Geopolitical Importance of the EU ETS

- The Fact on the Ground
- The Pioneering Example
  - Learning experience for those who follow
  - The subtle influence on the American debate
- The €20/tonne incentive and the CDM
  - Attracting interest from those outside
  - Influencing Chinese and Indian preferences

What Must Happen?

- Waiting for the US
  - No progress can be made without the US
  - CO_2 cap-and-trade system is being discussed
  - The problem is internal and political
- Bringing China, India, et al. aboard
  - Common but differentiated responsibilities
  - Becoming members of the club (à la WTO)

The Challenges Ahead

- Continuing the EU ETS and keeping it open
- Avoiding trans-Atlantic acrimony in global environmental diplomacy
  - First step is linking EU and US systems
- Developing combination of community and interest that will attract others (as in the EU)
- Finding a multinational institution to coordinate and negotiate accession/membership

NAP2 vs. NAP1

Different Totals ($Mt\text{-}CO_2$)	Notified to EC (16)	Announced (22)
With additional installations and reserves	+53.4	-8.6
w/o additional installations but with reserves	+10.6	-52.6
Only NAP1 installations	-46.7	-103.4

NAP2 vs NAP1
By Member State