The financial crisis and the 2°C target: Evidence so far and a possible global policy response

Achieving 2°C climate stabilisation: macroeconomic benefits or costs?

Hector Pollitt, Cambridge Econometrics

July 2013

Emissions and the Crisis

- Introduction and methodology
- Impacts of the recession
- Looking forwards

cambridge econometrics

Summary: Crisis and Recession

- The financial crisis started in the US housing market
- It quickly spread to other financial markets globally
- Global panic led to a collapse in investment
- International trade was severely affected
- GDP growth slowed and almost all developed countries entered recession

cambridge econometrics

Summary: Crisis and Recession (cont.)

- Initially governments provided support through stimulus packages
- This was quite short-lived in nature and was replaced in many countries with austerity
- Current prospects for growth remain mixed across global regions

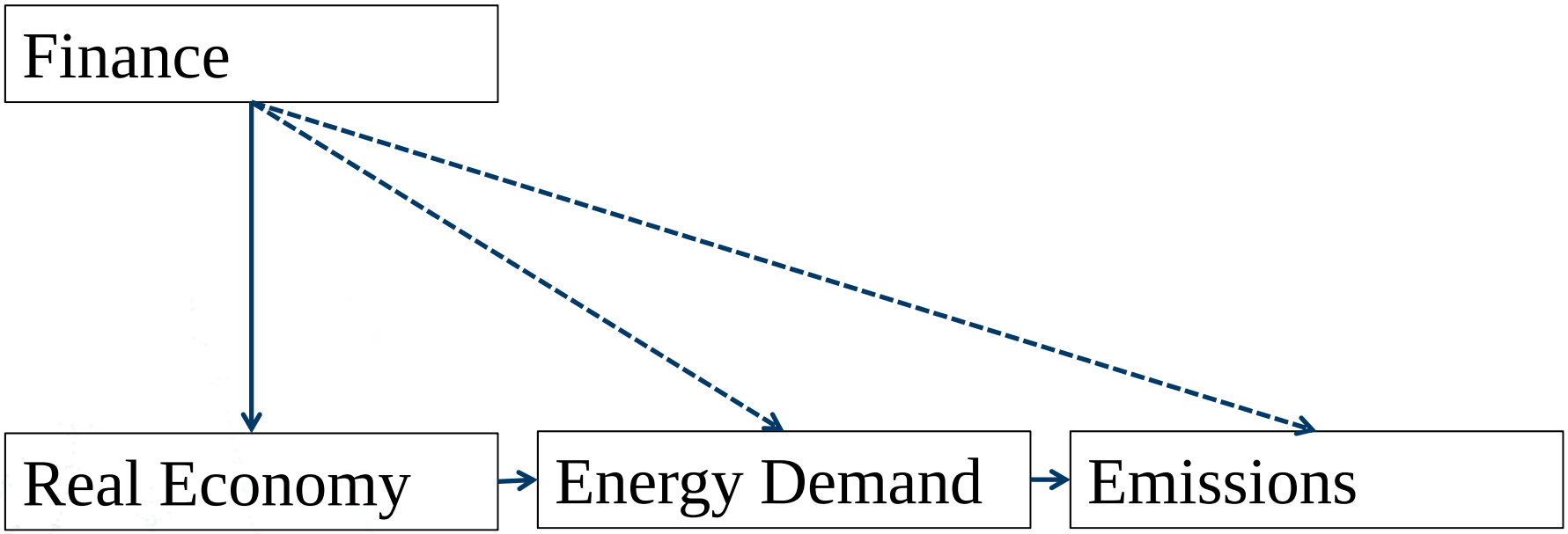
cambridge econometrics

Commodity and ETS Prices

- The recession caused a fall in commodity prices but prices have generally rebounded
  - there are both supply and demand factors in this
  - some of the recent increases could be due to QE
- There are lasting and negative effects on the EU ETS price; this may hold back other countries in developing carbon pricing

cambridge econometrics

How did the financial crisis affect emissions?



Decomposition of Energy Emissions

Four Components:

$$EnEM = POP * \frac{GDP}{POP} * \frac{Energy}{GDP} * \frac{Emissions}{Energy}$$

Population

GDP per capita

Energy intensity

Carbon intensity

cambridge econometrics

Other ways of splitting…

- By sector – Energy and carbon intensities could vary according to sectoral effects
- By geographical area - Intensities vary by country, particularly relating to electricity generation

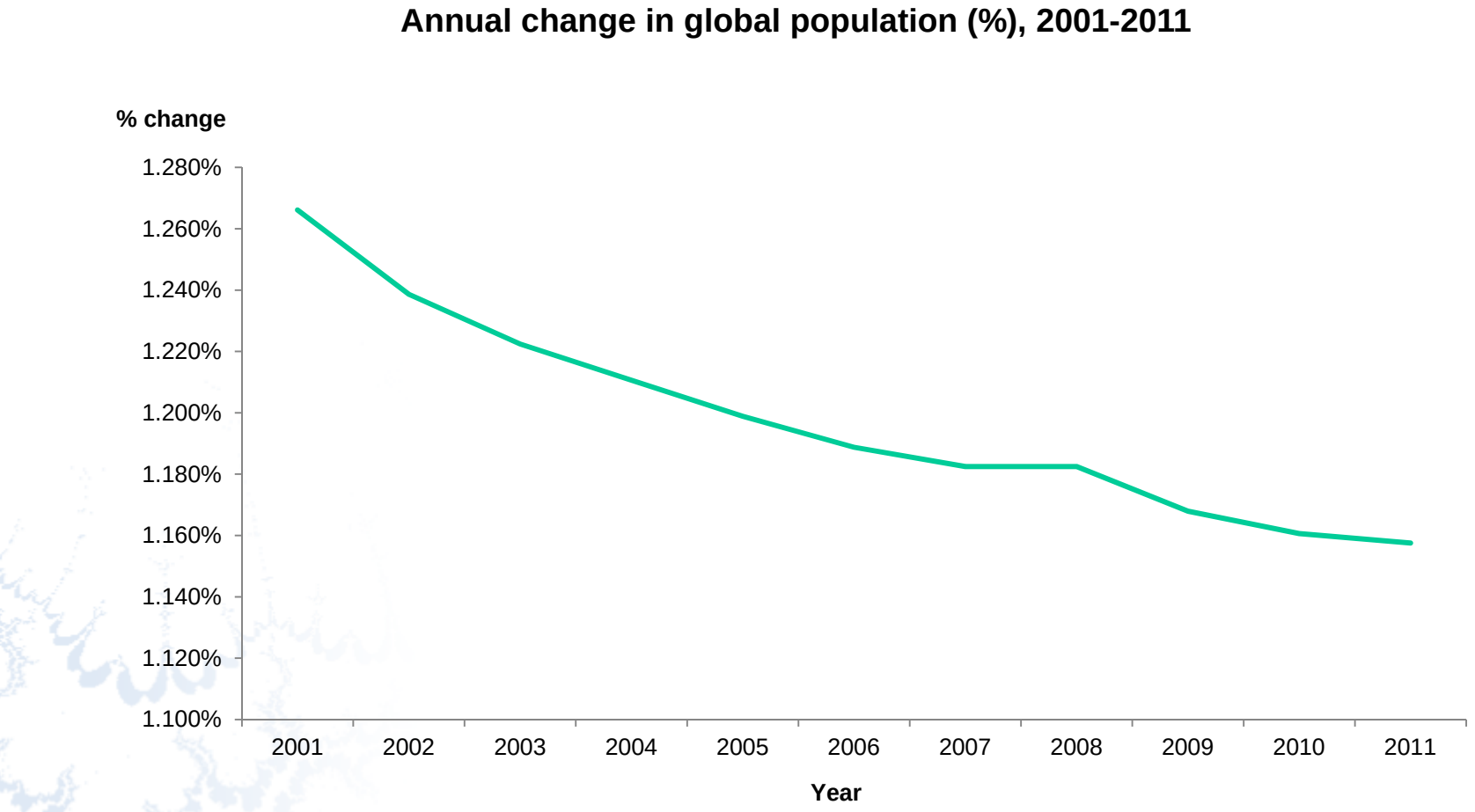
cambridge econometrics

Key Questions

- What did the financial crisis do to each of these four components?
- What are the lasting effects?
- To what extent can the negative effects be addressed by policy?

cambridge econometrics

Population in the crisis

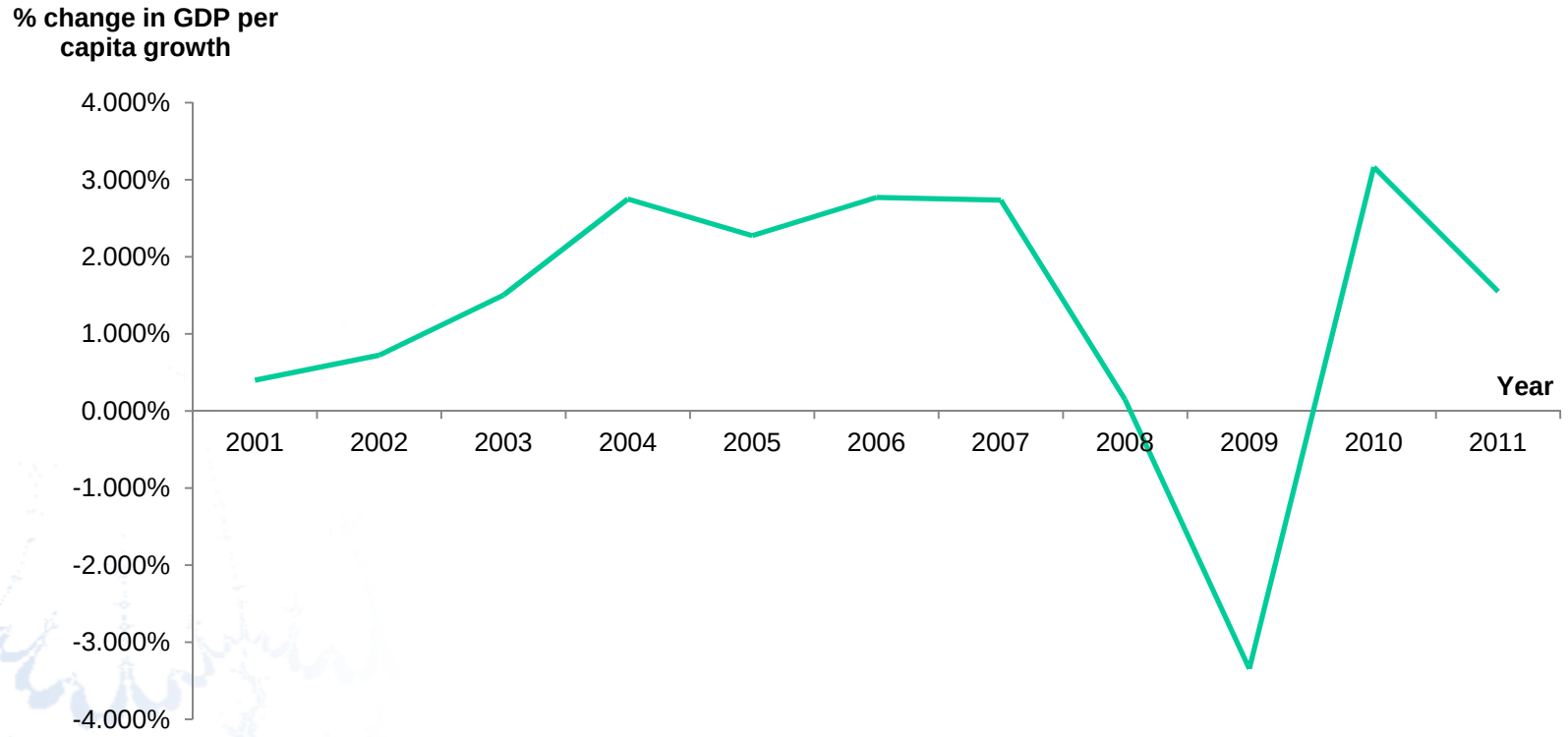


Source: World Bank

cambridge econometrics

GDP per capita in the crisis

Annual change in global GDP per capita (%), 2001-2011



Source: World Bank

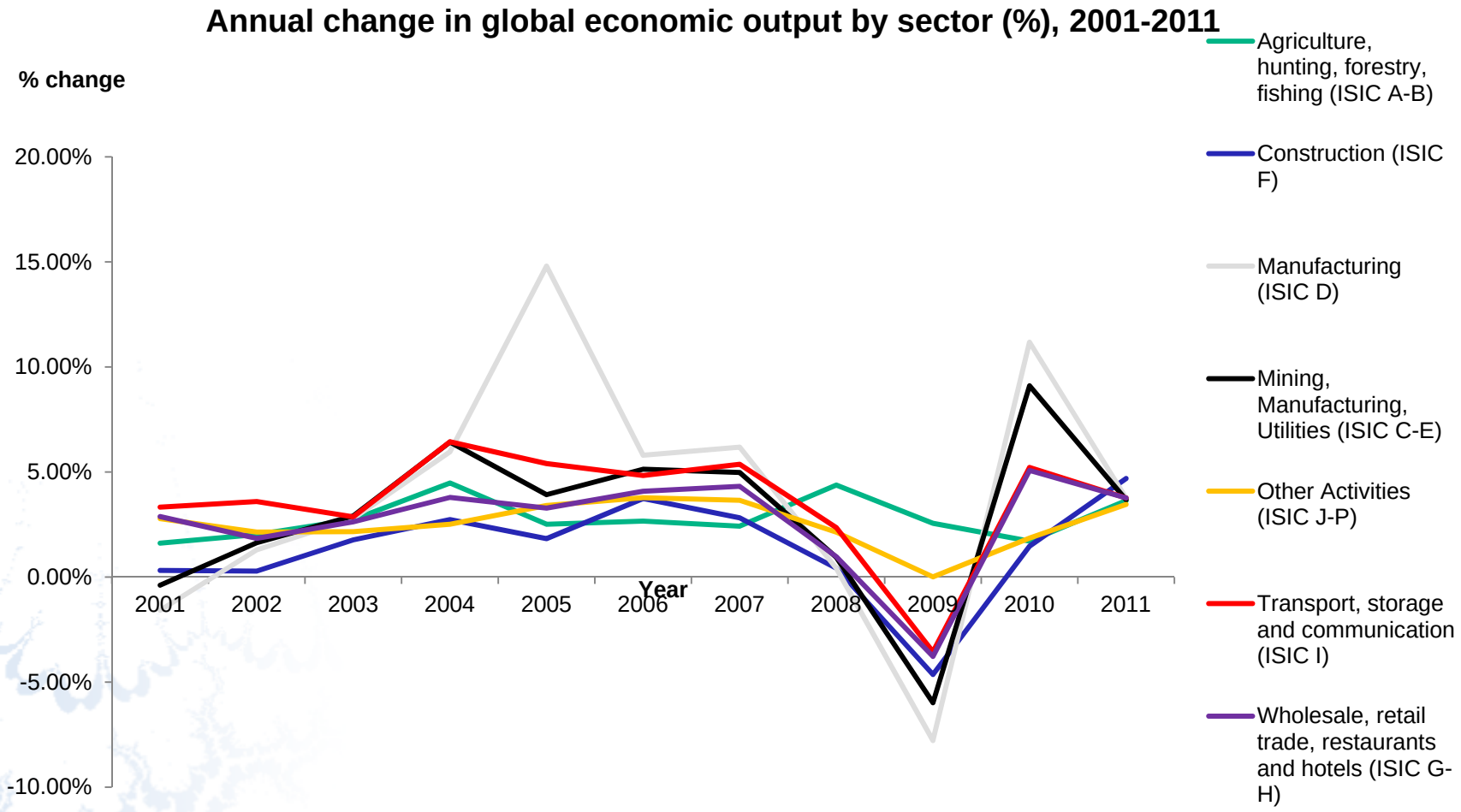
cambridge econometrics

Which sectors were affected?

- There is a clear order to how the sectors were affected by the financial crisis:
  - finance
  - sectors supporting finance
  - sectors relying on finance (e.g. manufacturing) and exposed to loss of confidence (e.g. construction)
  - consumer services
  - government sectors

cambridge econometrics

Economic Output



Source: UN

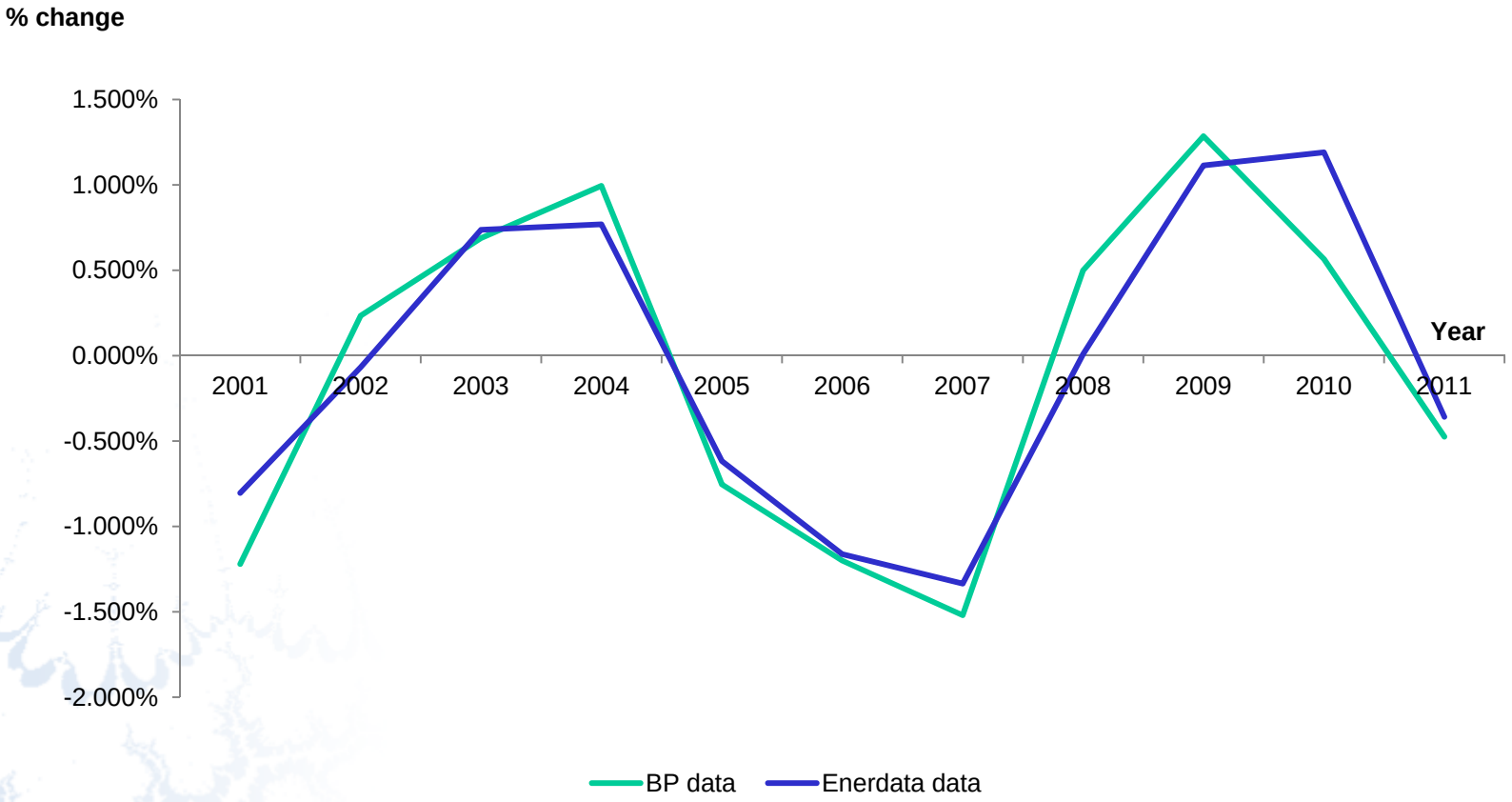
cambridge econometrics

Energy Intensity

- Change in energy intensity can be broken down to:
  - change in sectoral composition
  - energy intensity in any individual sector
- Ideally, changes in energy prices could be separated as well

Energy Intensity

Annual change in global energy intensity (%), 2001-2011



Sources: World Bank; BP Statistical Review of World Energy June 2013; & Enerdata Global Energy Statistical Yearbook 2012

cambridge econometrics

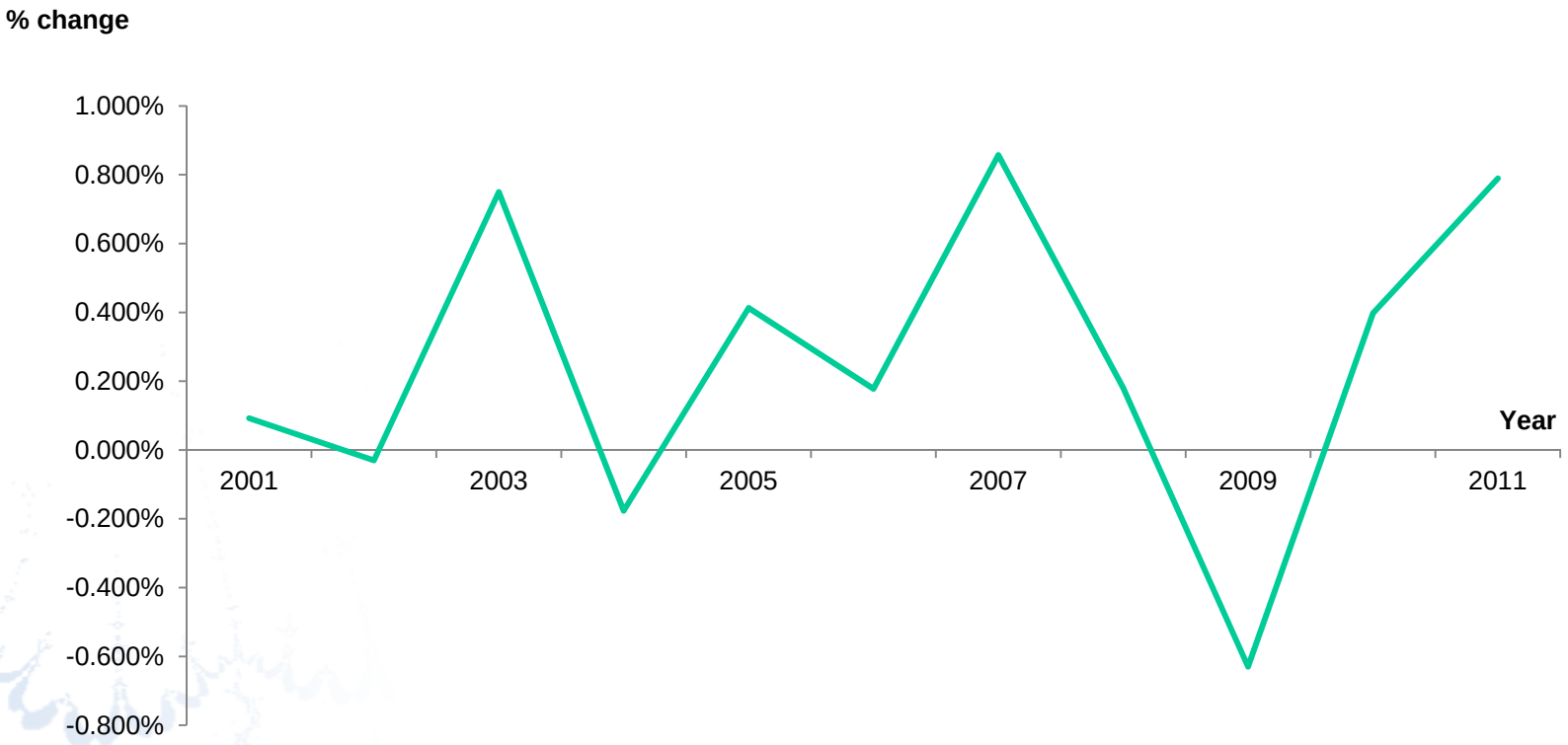
Carbon Intensity

- Carbon intensity is a direct function of the energy mix
  - in particular the share of coal in total primary energy consumption
  - e.g. Chinese use of coal could increase intensity, growing use of shale gas could reduce it

cambridge econometrics

Carbon Intensity

Annual change in carbon intensity of global energy use (%), 2001-2011

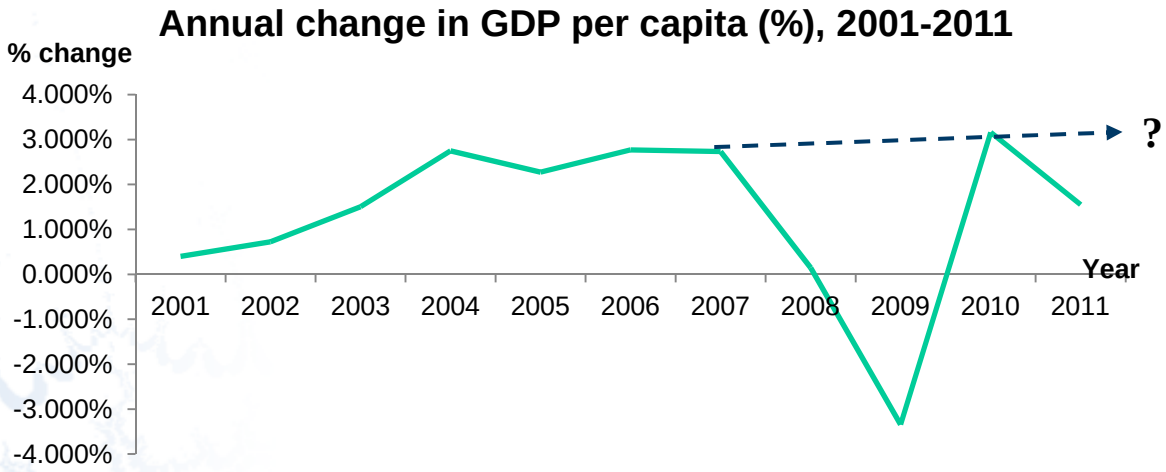


Sources: World Bank & Enerdata Global Energy Statistical Yearbook 2012

cambridge econometrics

What would have happened if… ?

- … there had not been a recession?
- Evidence here suggests emissions would be higher in line with GDP?



The Role of Policy

- In the immediate aftermath of the crisis, there was active policy to:
  - increase GDP
  - reduce energy intensity
  - reduce carbon intensity

cambridge econometrics

‘Green’ Recovery Plans

- A study in 2011 found that:
  - European countries allocated €18bn out of total stimulus packages of €150bn to green measures
  - some other countries (e.g. China, Korea) had much larger packages
  - the short-term economic benefits of investment schemes matched the short-term benefits of other types of investment, if projects were identified
  - energy efficiency (and renewables) could have longer-term benefits from reduced fossil fuel imports
  - there was sometimes a trade-off between immediate benefits (investment) and long-term benefits (research)

http://ec.europa.eu/environment/enveco/memberstate_policy/pdf/green_recovery_plans.pdf

cambridge econometrics

More Recent Policy

- Current policy is less clear cut (and varied), but it could be argued that it:
  - reduces GDP (austerity)
  - reduces energy intensity (efficiency programmes)
  - is neutral on carbon intensity (renewables subsidies cut but use of feed-in tariffs growing; EUA close to zero)

Could austerity help?

- Recent analysis in Europe has shown that revisions to energy taxes could reduce government deficits at a lower cost than alternative measures
- In the US, a larger domestic energy sector suggests costs would be higher, but still similar to alternative approaches

http://www.globalpolicyjournal.com/articles/global-commons-and-environment/potential-role-carbon-pricing-reducing-european-deficits

http://www.rff.org/Documents/carbon-tax-impacts-summary-25june13.pdf

cambridge econometrics

Conclusions: Lasting Effects

- It is often said that the recession ‘bought time’ but without reform, previous trends will resume
- Possibly it is too early to judge, as western economies are still emerging from recession; this remains the policy priority
- But this analysis does not provide evidence to suggest otherwise

cambridge econometrics

Conclusions: Lasting Effects

- Limitations in access to finance for both R&D and new equipment are a concern – messages are quite mixed
- How much could progress be driven by the developing world?
- Is a global response possible?

cambridge econometrics

The financial crisis and the 2°C target: Evidence so far and a possible global policy response

Achieving 2°C climate stabilisation: macroeconomic benefits or costs?

Hector Pollitt, Cambridge Econometrics

July 2013