



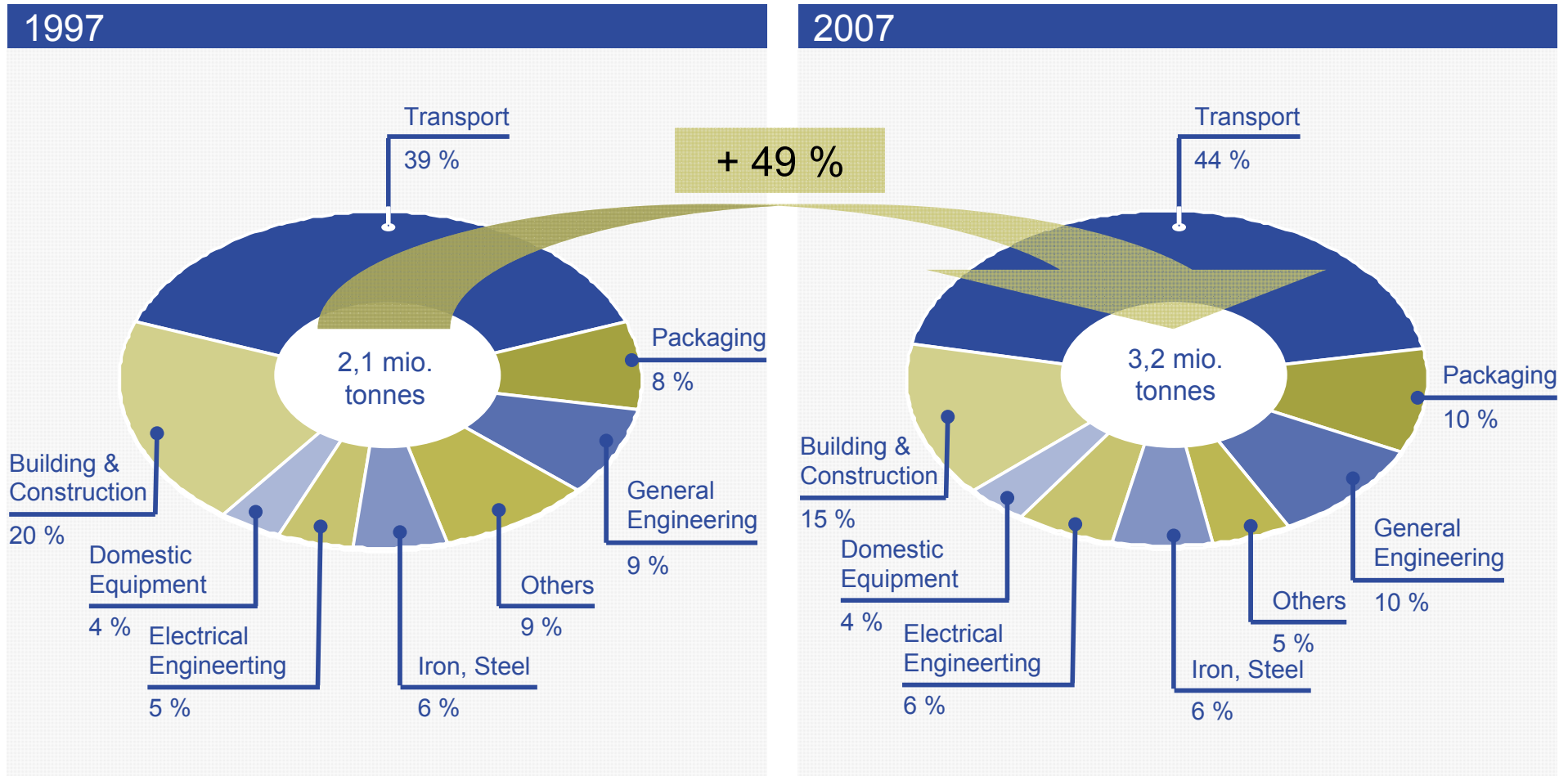
Why a successful automotive industry is needed for long-term growth of the aluminium industry and vice versa: A German example

November 24th, 2009 | Düsseldorf

Andreas Postler

Aluminium markets in Germany

Development between 1997 and 2007



Aluminium markets in Germany

Aluminium products for the transportation sector in 2007

Extruded products (26 % of the transportation market)

Examples: fuel system, liquid lines, ...

Market share of transportation: approx. $\frac{1}{3}$

Flat rolled products (45 % of the transportation market)

Examples: hoods, doors, wings, bumpers, ...

Market share of transportation: approx. $\frac{1}{3}$

Casted products (29 % of the transportation market)

Examples: transmission housings, chassis, ...

Market share of transportation: more than $\frac{3}{4}$

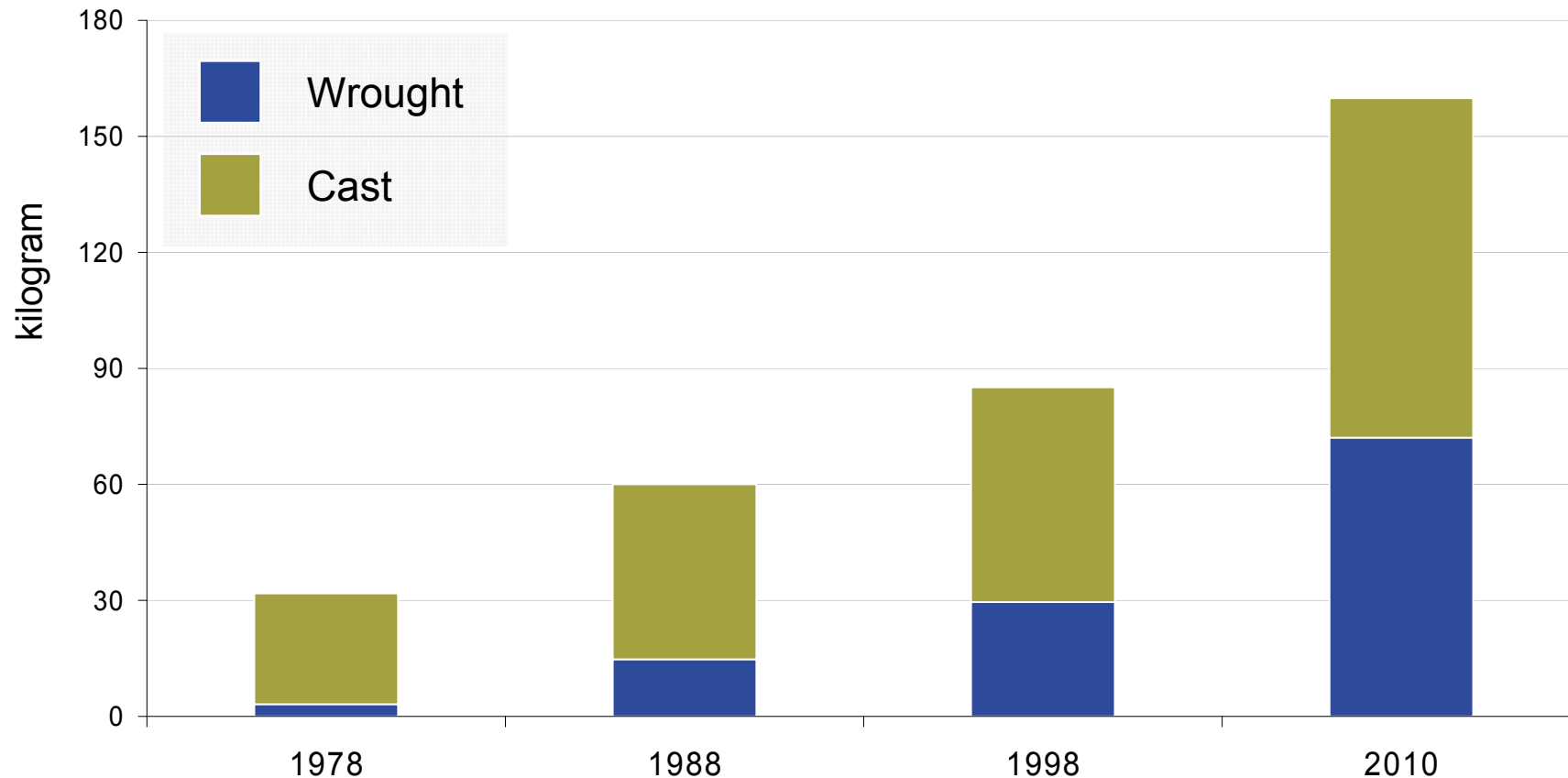
Wrought

Alloys

Cast

Share of Aluminium per passenger car in Europe

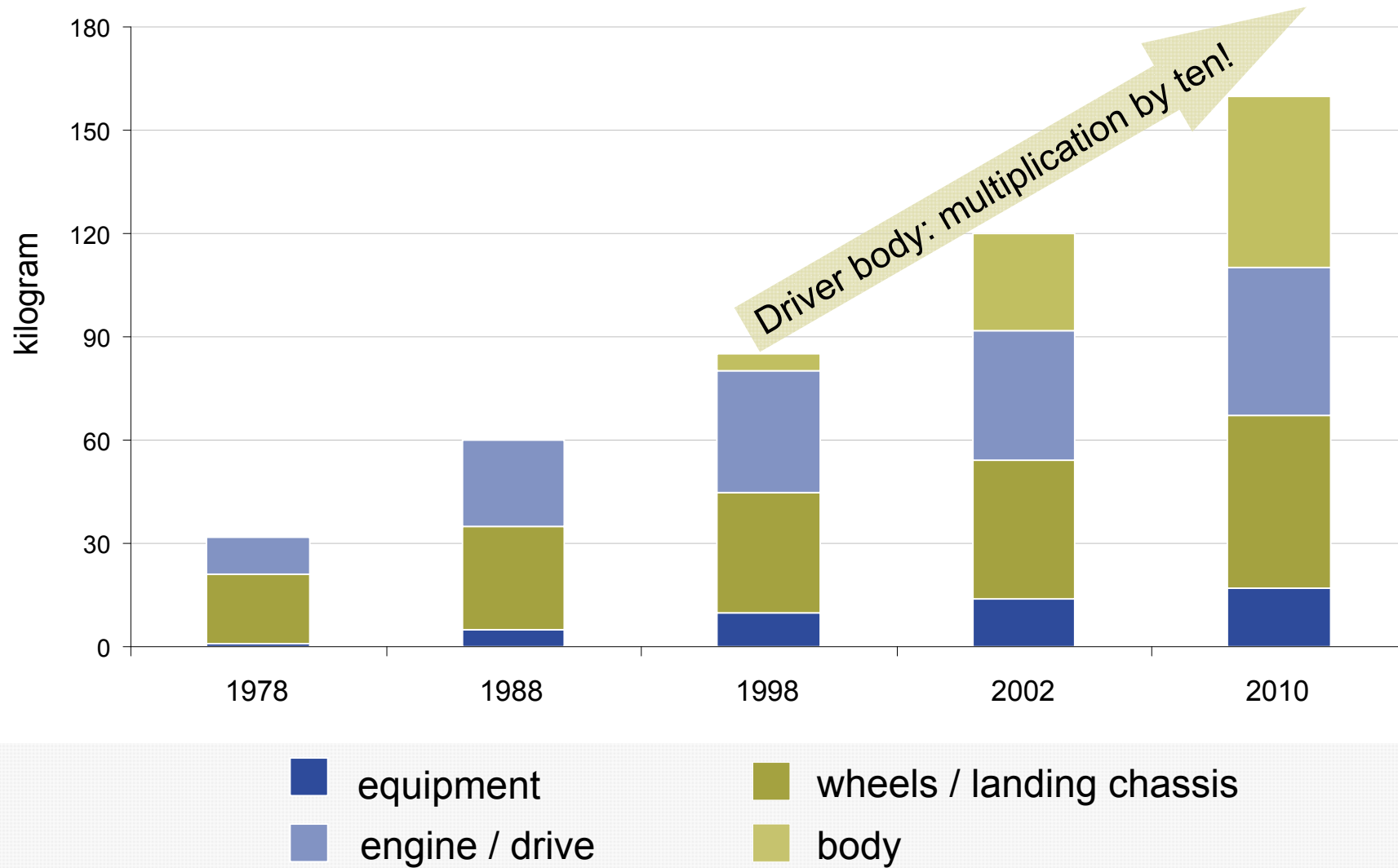
Breakdown of alloys | GDA estimation



Driver is the development of wrought alloys with multiplication by 23, whereas cast alloys increased by the factor 3.

Share of Aluminium per passenger car in Europe

Breakdown of components | GDA estimation



Long-term growth estimation

Overview

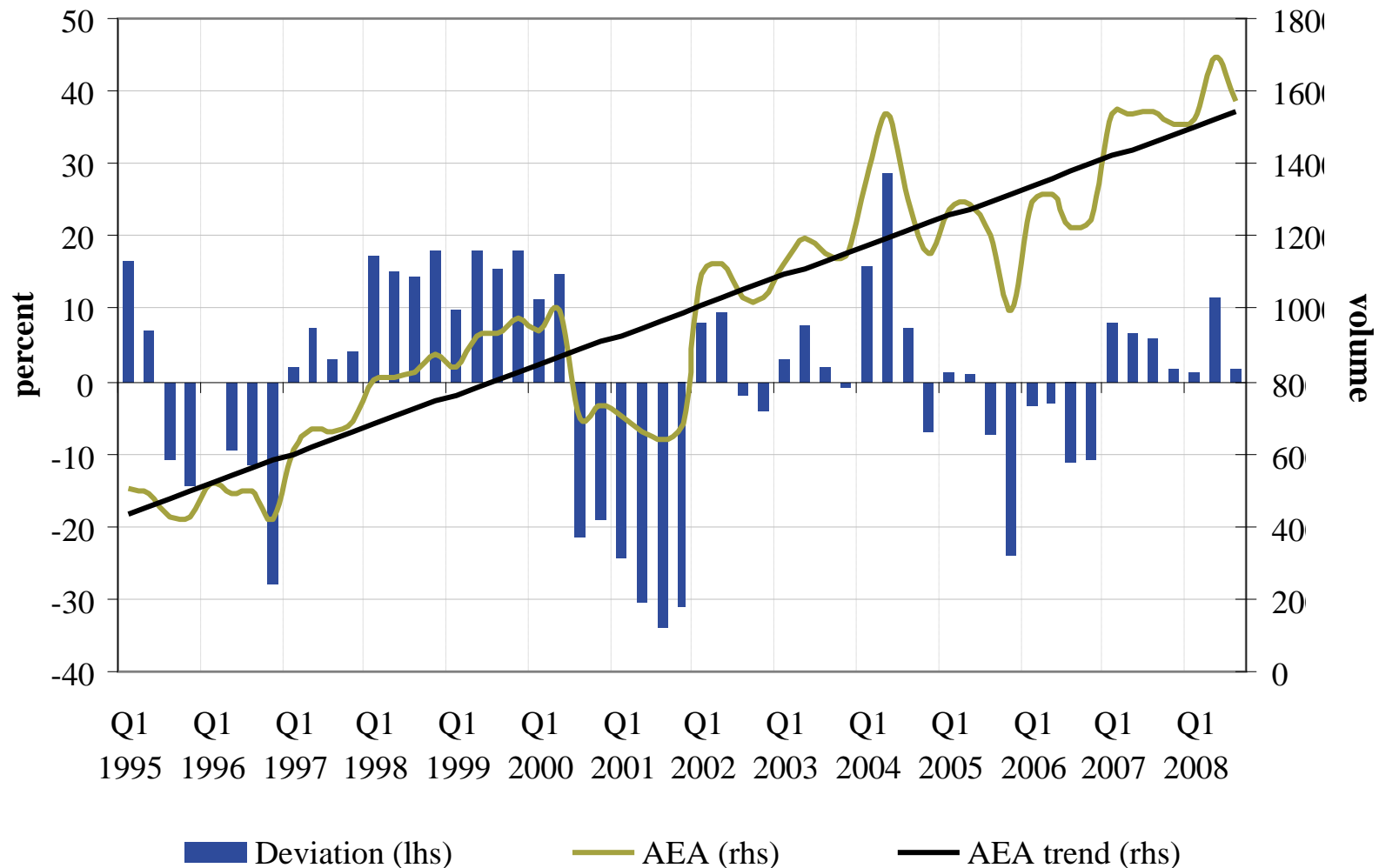
- ➔ Main question: Is long-term growth affected strongly by the current economics crisis?
- ➔ Data: Deliveries of German extruded products into the automotive sector (AEA – automotive extruded aluminium)
- ➔ Comparison of the time periods “prior to the crisis” and “aftermath of the crisis”
- ➔ Two types of models are used: a linear regression model (model 1) and a *Hodrick-Prescott* Filter (model 2)

Literature:

- Hodrick, R.J. and E.C. Prescott (1997), *Postwar U.S. Business Cycles: An Empirical Investigation*, *Journal of Money, Credit and Banking* 29, p. 1-16.
- Greene, W.H. (1999, 4th ed.) *Econometric Analysis*, Prentice Hall.

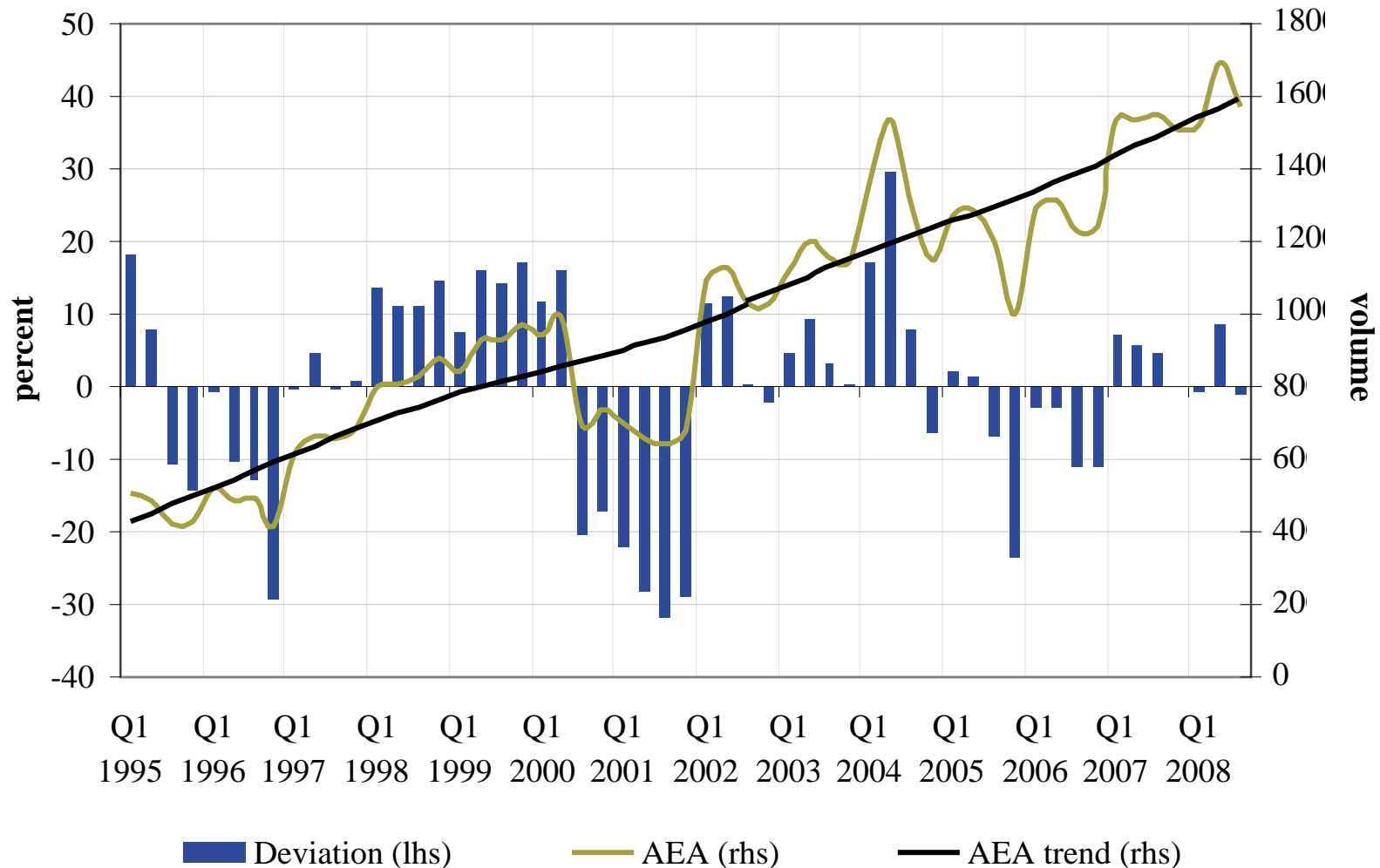
Long-term growth estimation

Results | Prior to the crisis | Linear times series model



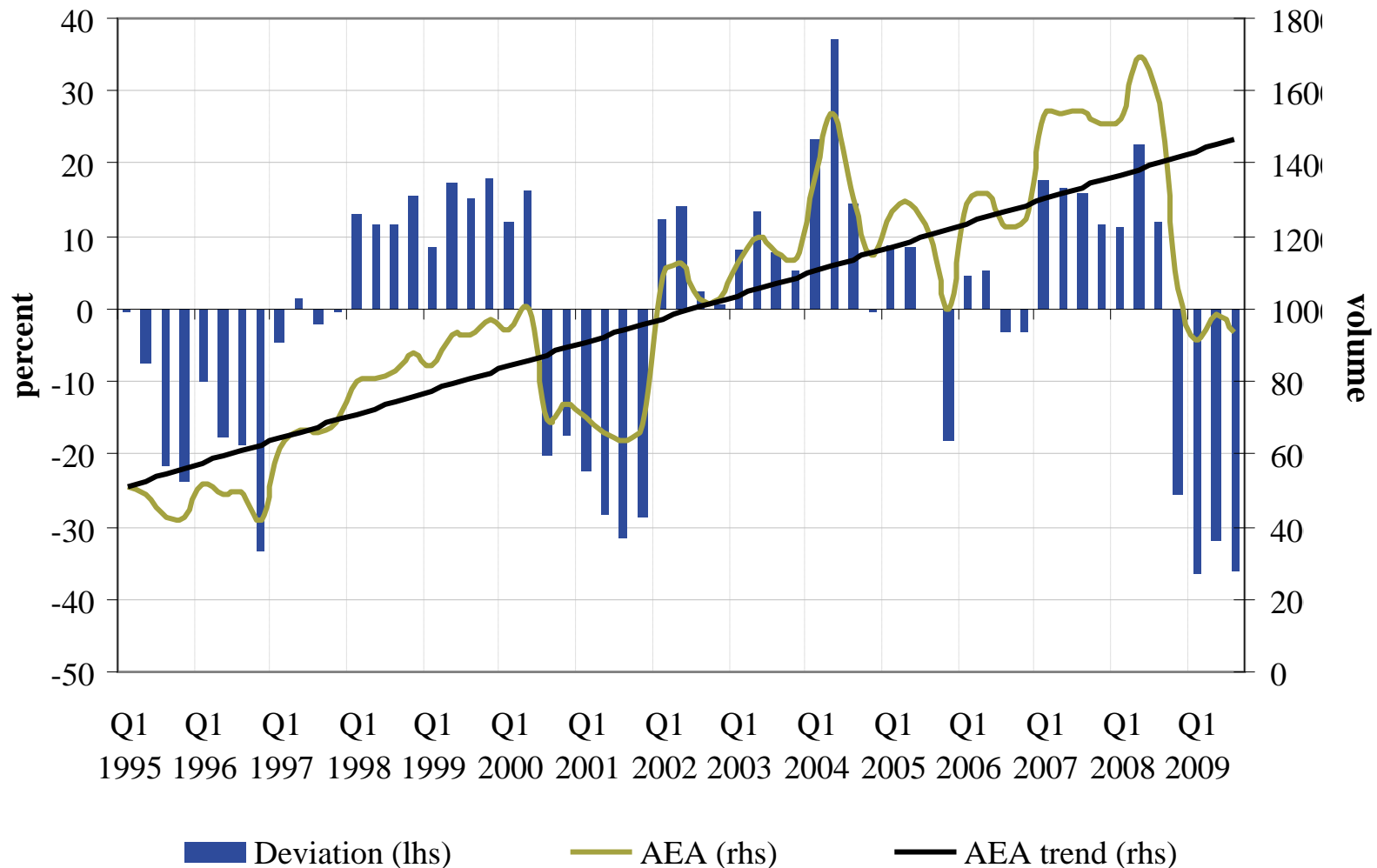
Long-term growth estimation

Results | Prior to the crisis | *Hodrick-Prescott filter*



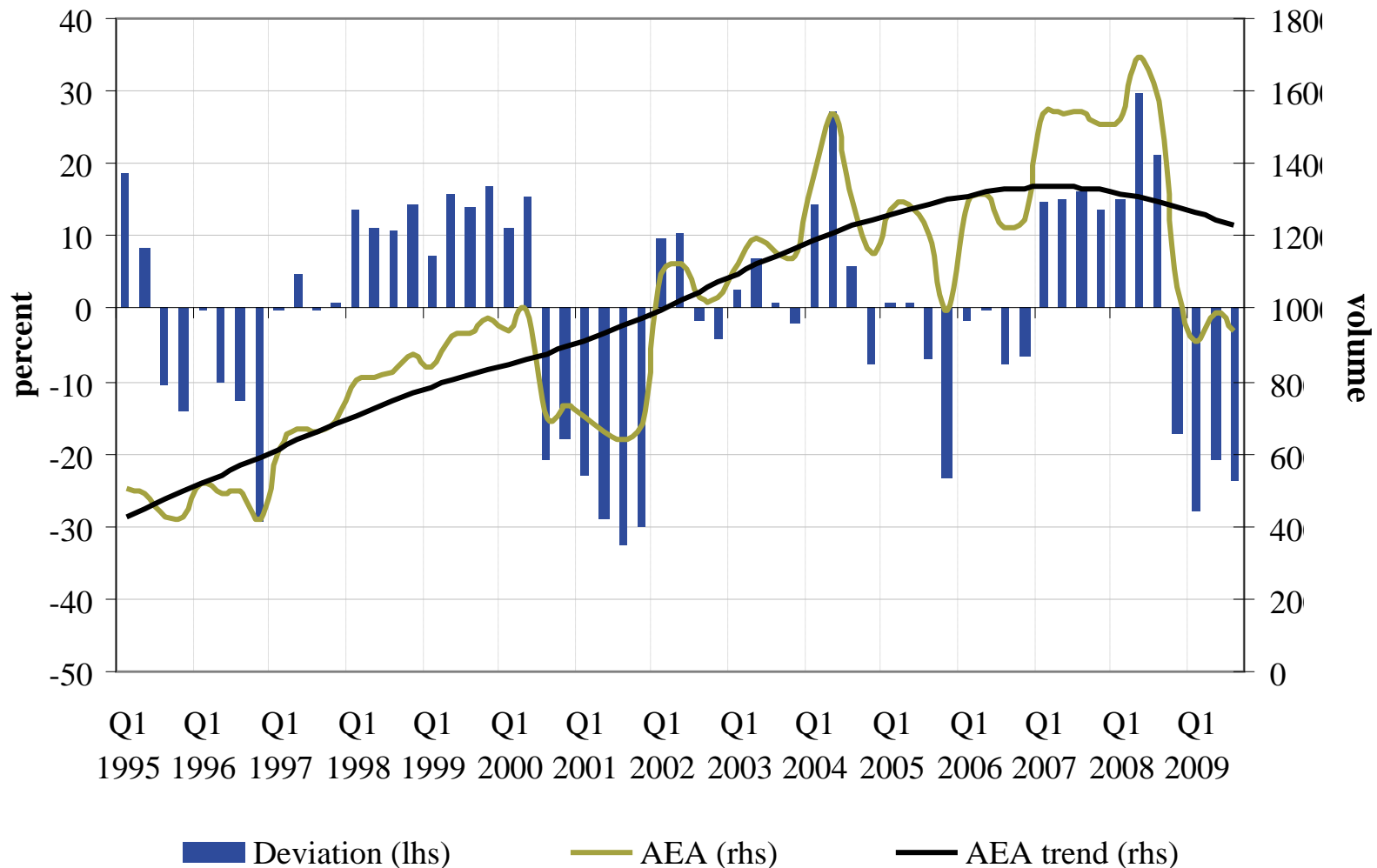
Long-term growth estimation

Results | Aftermath of the crisis | Linear times series model



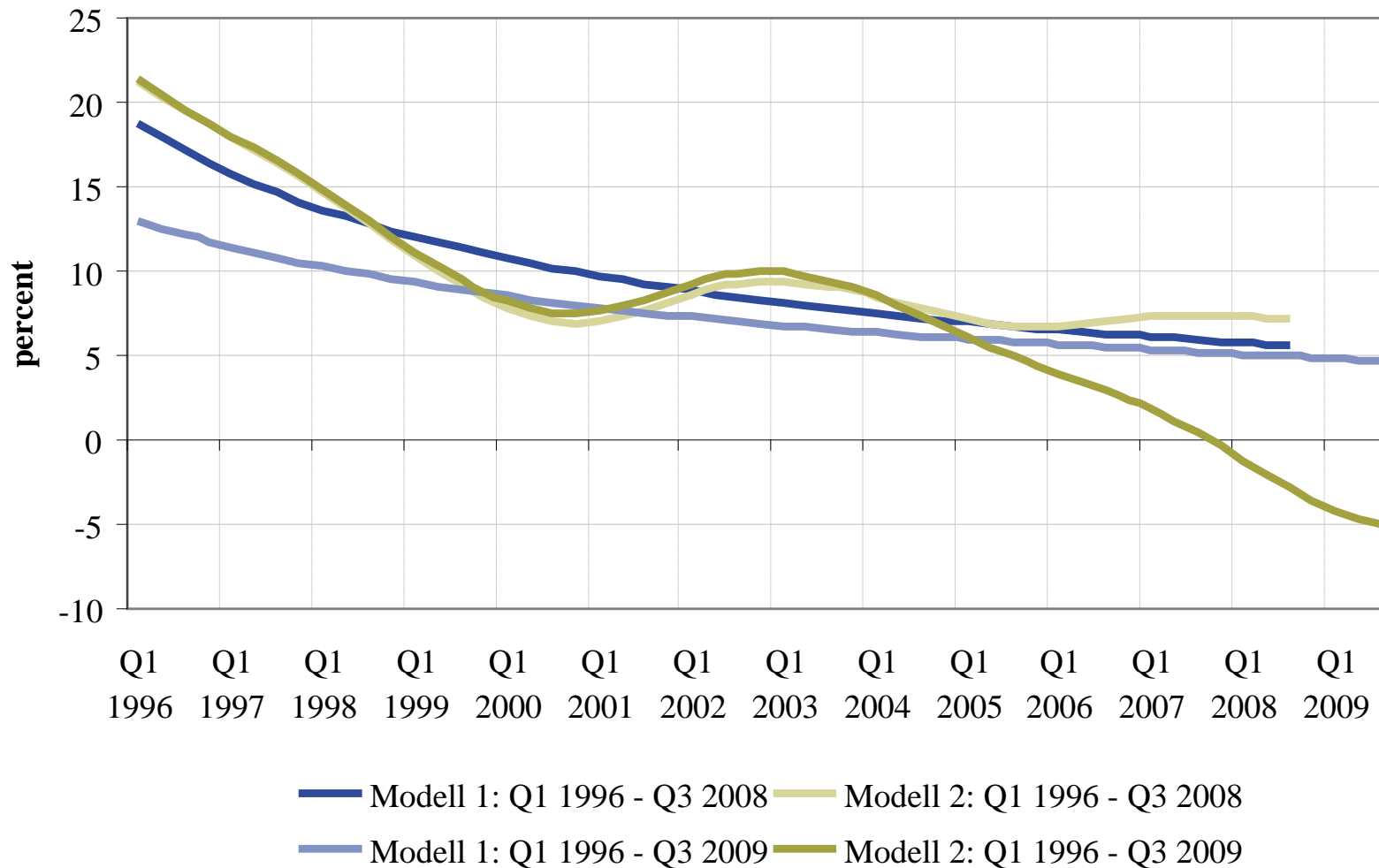
Long-term growth estimation

Results | Aftermath of the crisis | *Hodrick-Prescott filter*



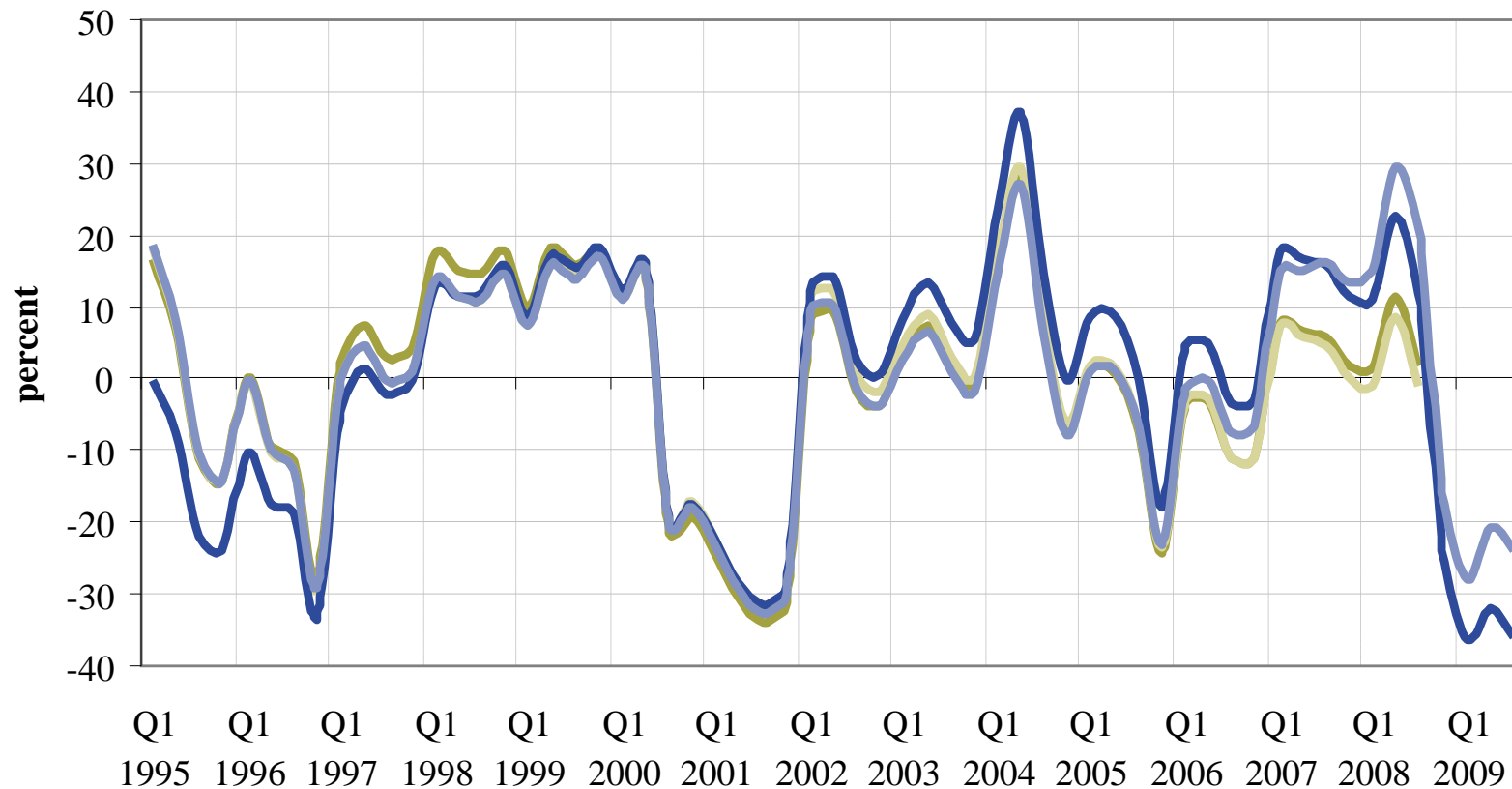
Long-term growth estimation

Results | Comparison | Long-term growth



Long-term growth estimation

Results | Comparison | Output gap

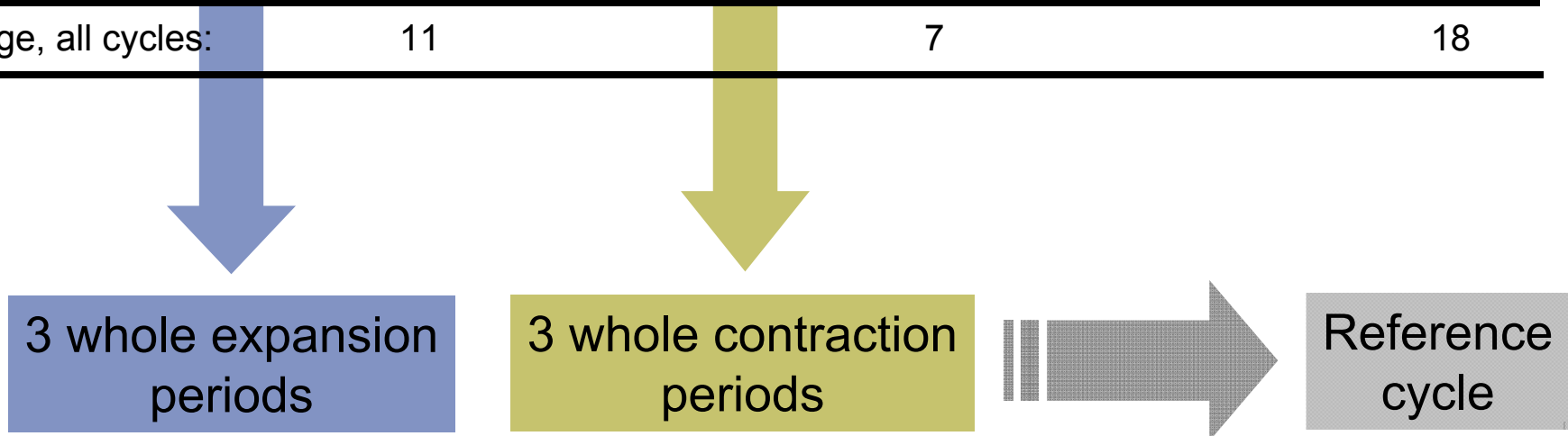


— Model 1: Q1 2002 - Q3 2008
 — Model 2: Q1 2002 - Q3 2008
— Model 1: Q1 2002 - Q3 2009
 — Model 2: Q1 2002 - Q3 2009

Long-term growth forecast

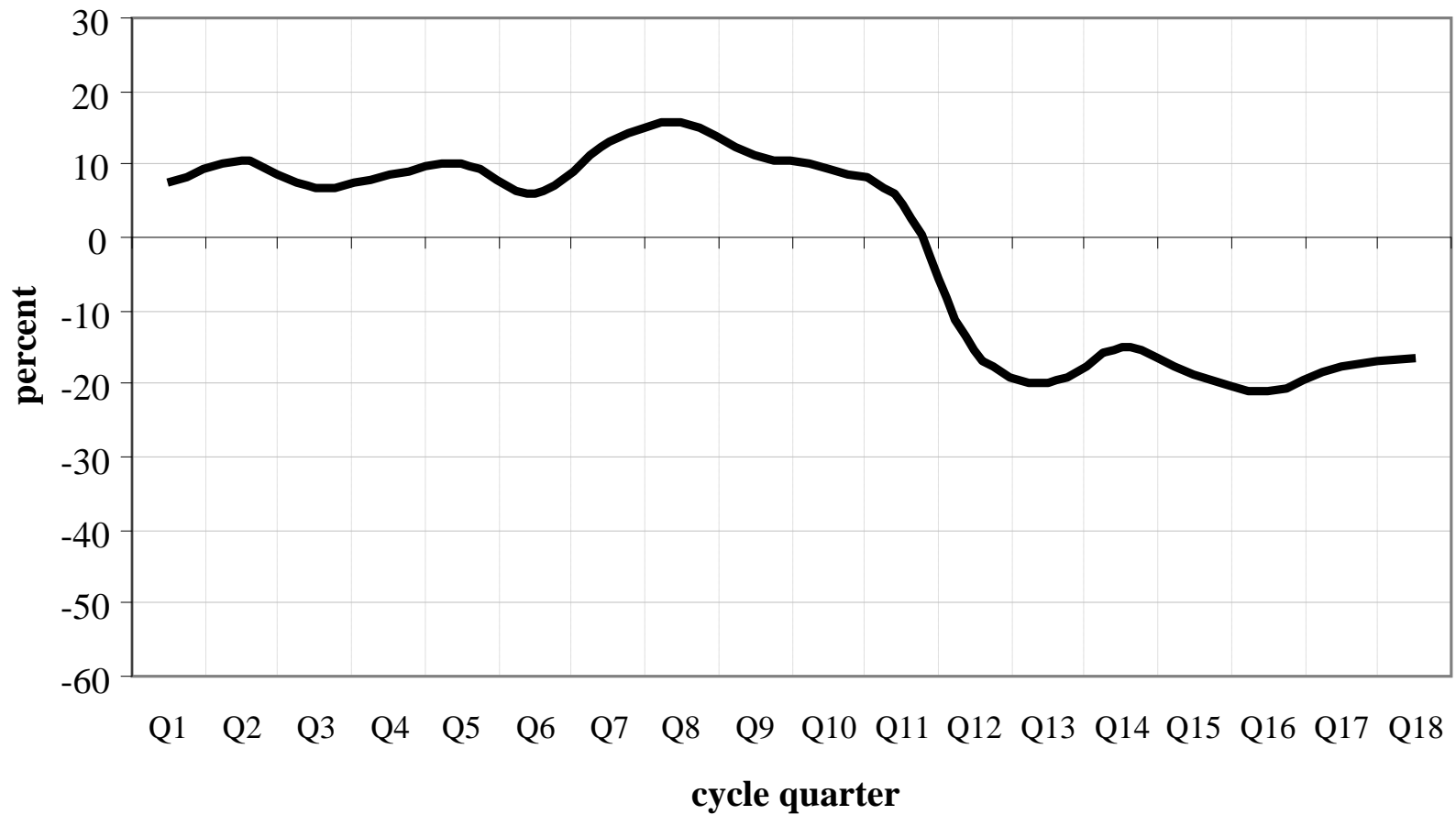
Business cycle dating

Cycle	Expansion			Contraction			Cycle			
	Nr.	Begin	End	Duration in quarters	Begin	End	Duration in quarters	Begin	End	Duration in quarters
1	n.a.	Q2 1995	> 2	Q3 1995	Q3 1997	9	n.a.	Q3 1997	> 11	
2	Q4 1997	Q2 2000	11	Q3 2000	Q4 2001	6	Q4 1997	Q4 2001	17	
3	Q1 2002	Q2 2005	14	Q3 2005	Q4 2006	6	Q1 2002	Q4 2006	20	
4	Q1 2007	Q3 2008	7	Q4 2008	n.a.	> 4	Q1 2007	n.a.	> 11	
Average, all cycles:			11				7			



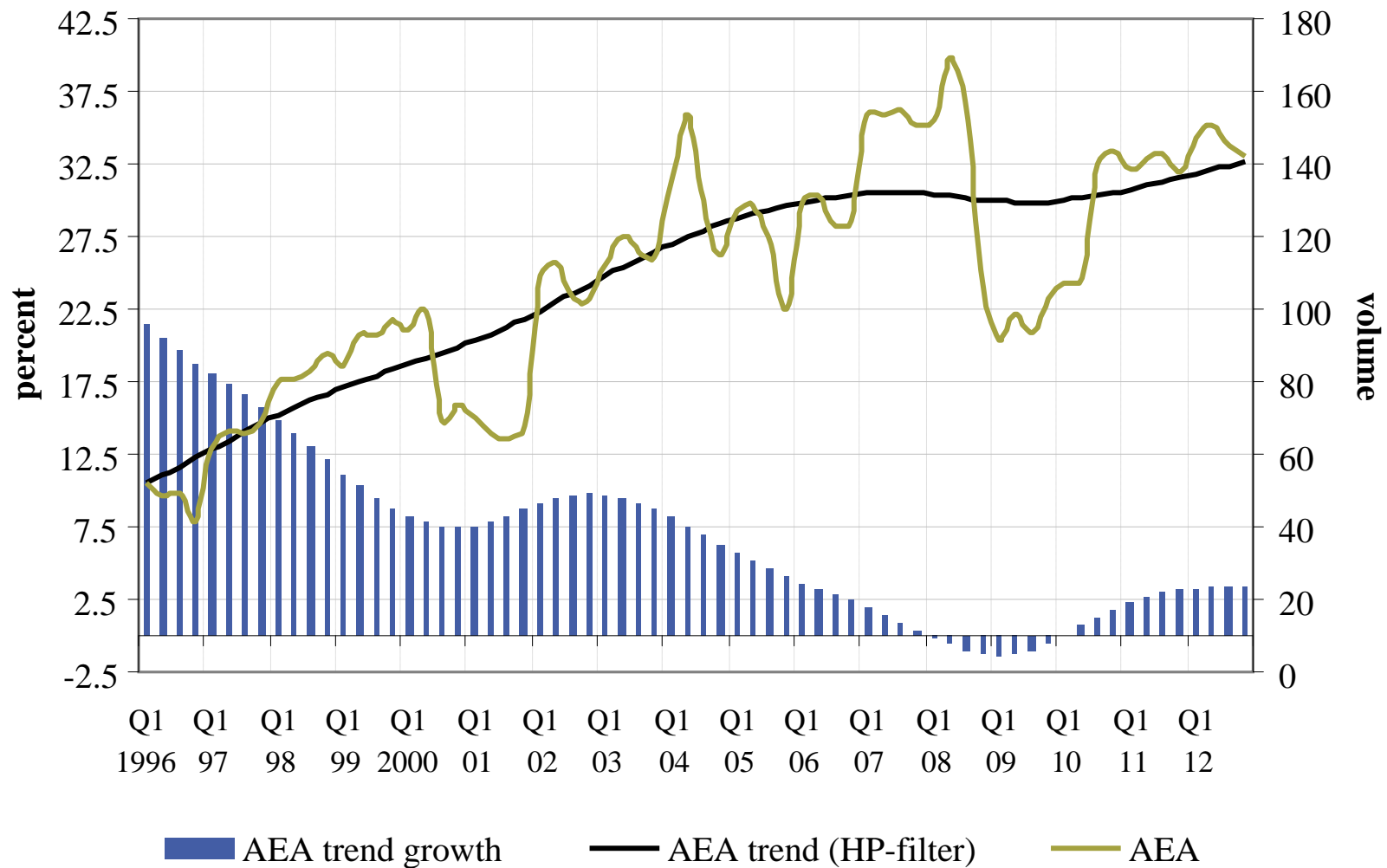
Long-term growth forecast

Reference cycle construction



cycle 1 cycle 2 cycle 3 cycle 4 — reference cycle

Long-term growth forecast Results



Summary

- ➔ The global economic recession has affected the development of long-term growth substantially!
- ➔ Long-term growth will recover with growth rates up to three percent in 2012.
- ➔ 2009 will be a year of modest long-term growth reduction.
- ➔ Probably there will not be a rapid catching-up process and it will take same time to reach the high levels of the past years.
- ➔ A growth strategy could speed the catching-up process.

The likelihood for a higher long-term growth path
in the mid-term is not low!



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