Global Economic Outlook 2014 and comparing the forecasting performance of international organizations

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Views expressed here are those of the speakers and they do not necessarily represent the views of the UN

PART ONE

United Nations World Economic Situation and Prospects 2014

Chapter I: Global Economic Outlook

Outline for PART ONE

- **Global macroeconomic trends**

  growth prospects

  inflation and employment

  international trade and finance

- **Uncertainties and risks**
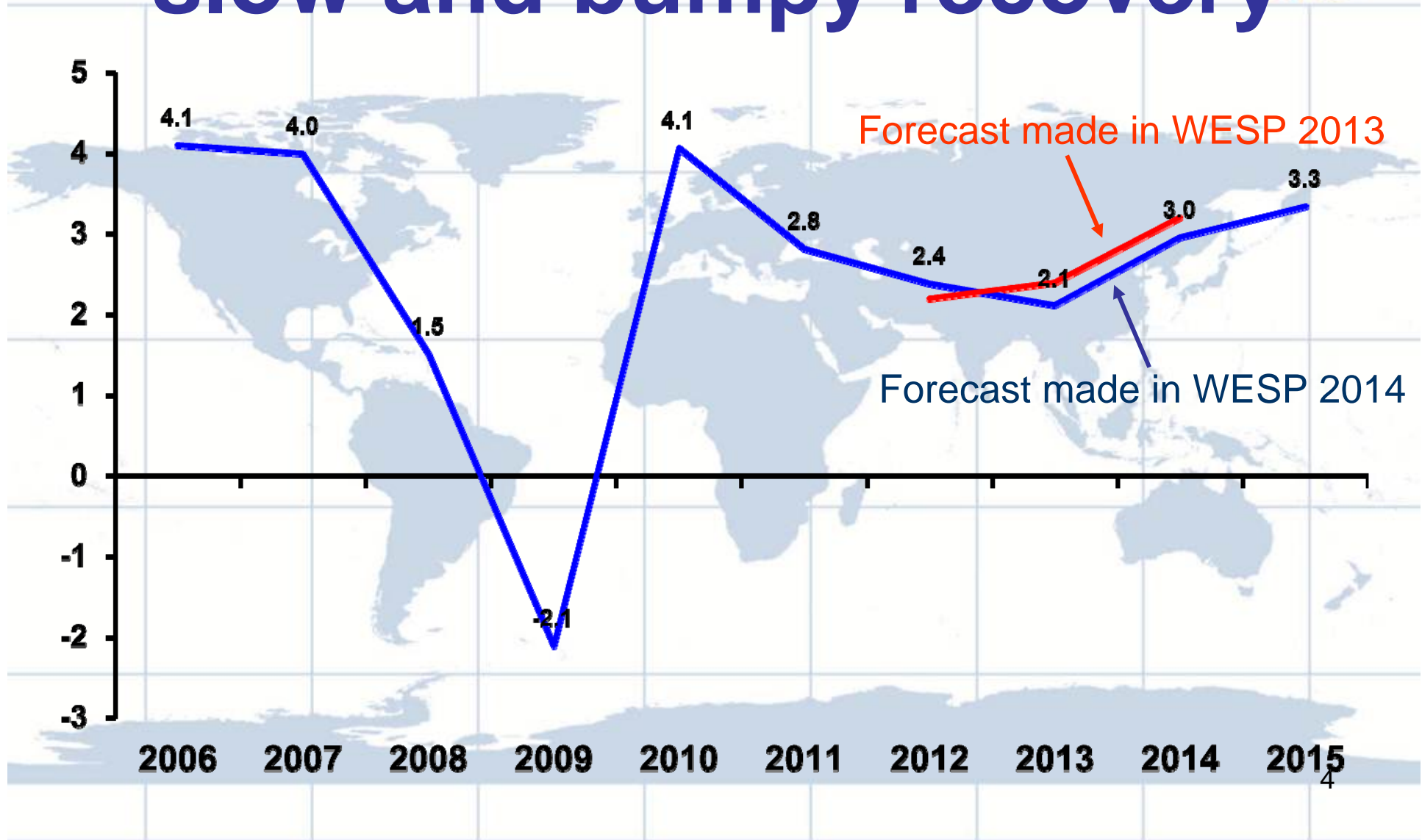
  QE exit, vulnerability in EM
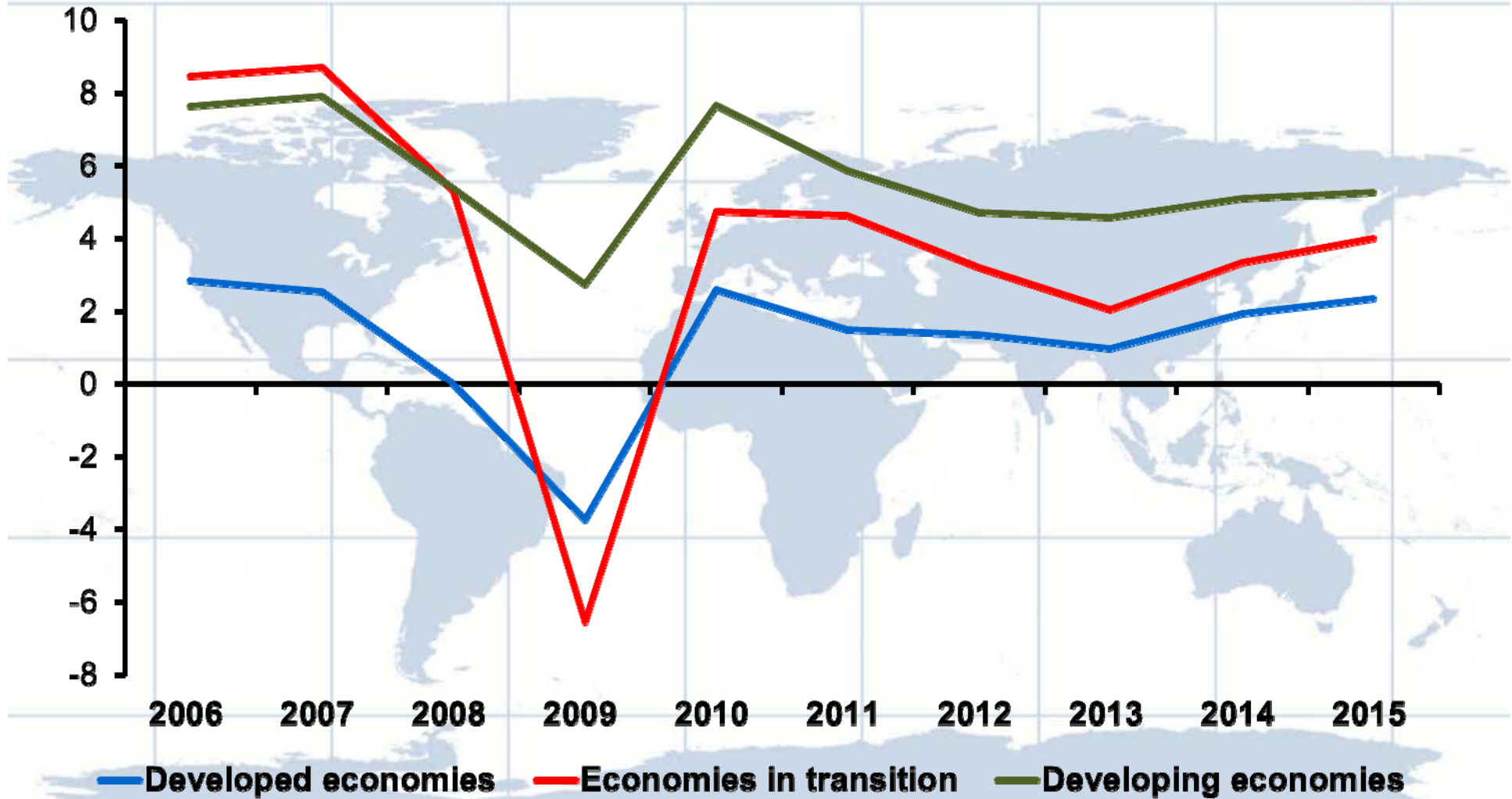
  Remaining risks in euro area

- **Policy issues**

  fiscal and monetary policy stance

  international policy coordination
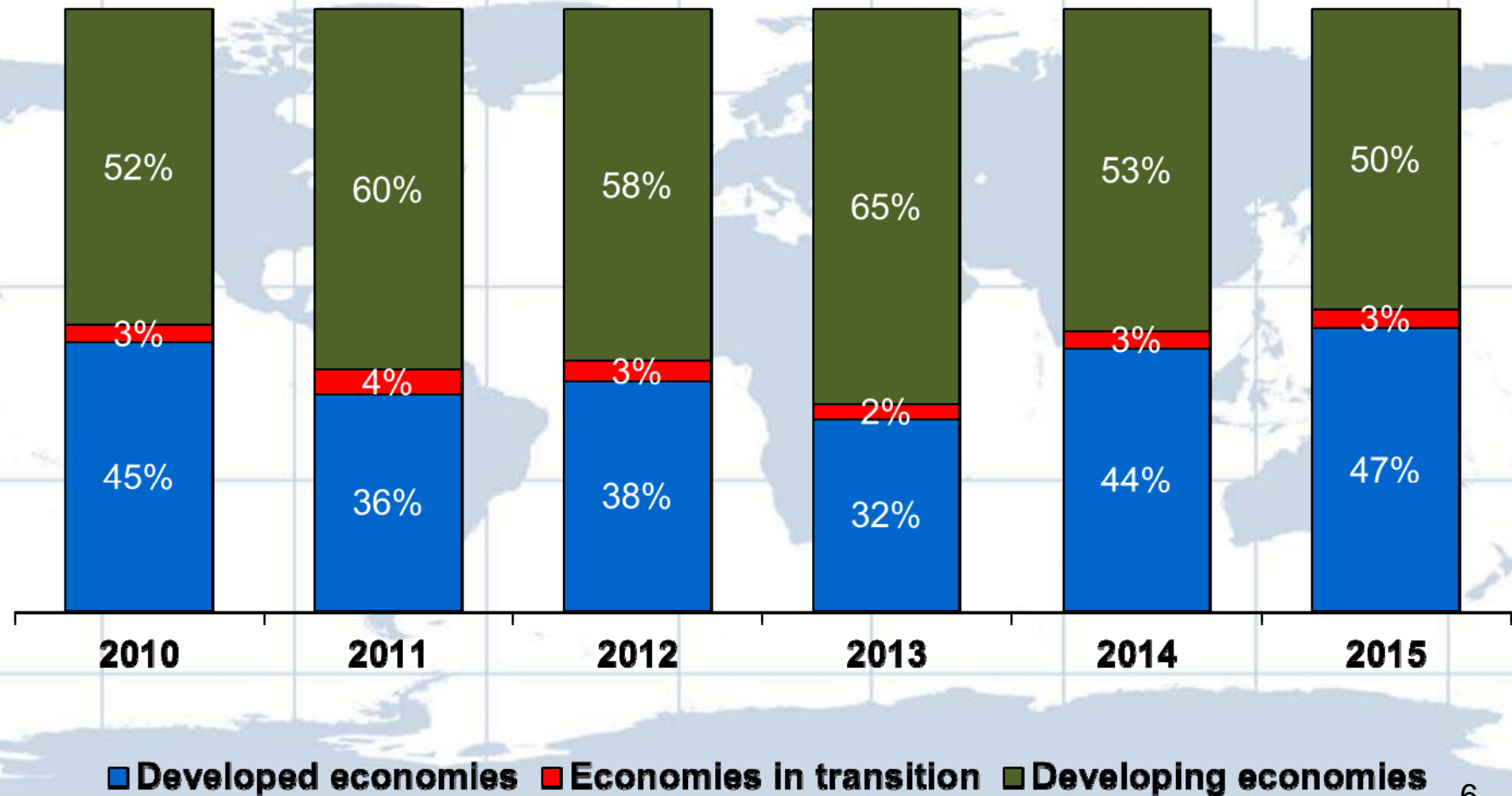
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# Global economy still on a slow and bumpy recovery

Forecast made in WESP 2013

Forecast made in WESP 2014

4.1 · 4.0 · 1.5 · -2.1 · 4.1 · 2.8 · 2.4 · 2.1 · 3.0 · 3.3

2006 · 2007 · 2008 · 2009 · 2010 · 2011 · 2012 · 2013 · 2014 · 2015

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De-coupling or re-coupling

Chart legend: Developed economies (blue), Economies in transition (red), Developing economies (green), years 2006–2015, y-axis scale from -8 to 10.

A shift in growth contribution?

Share of Contribution to WGP Growth

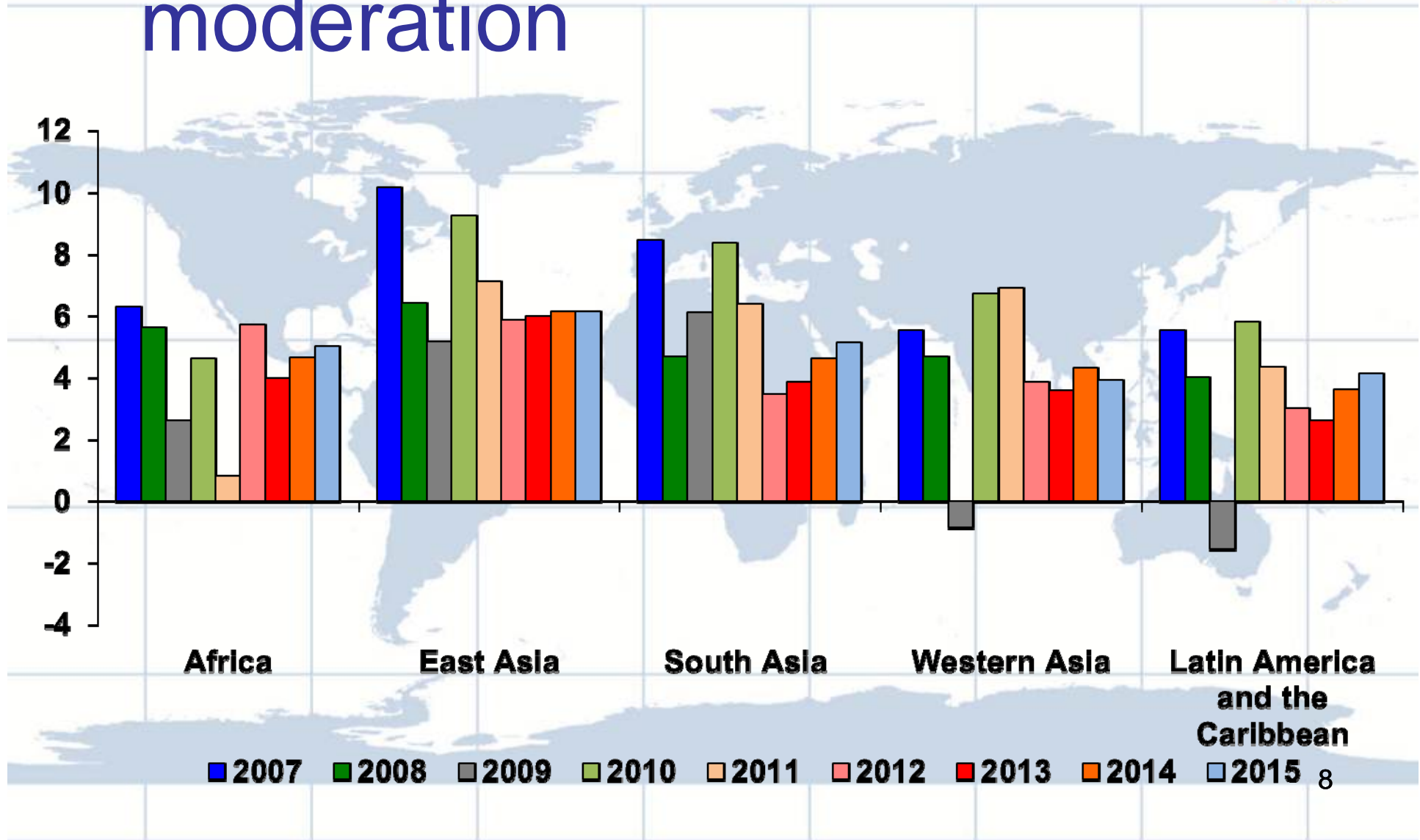|	2010	2011	2012	2013	2014	2015
Developing economies	52%	60%	58%	65%	53%	50%
Economies in transition	3%	4%	3%	2%	3%	3%
Developed economies	45%	36%	38%	32%	44%	47%

■ Developed economies ■ Economies in transition ■ Developing economies

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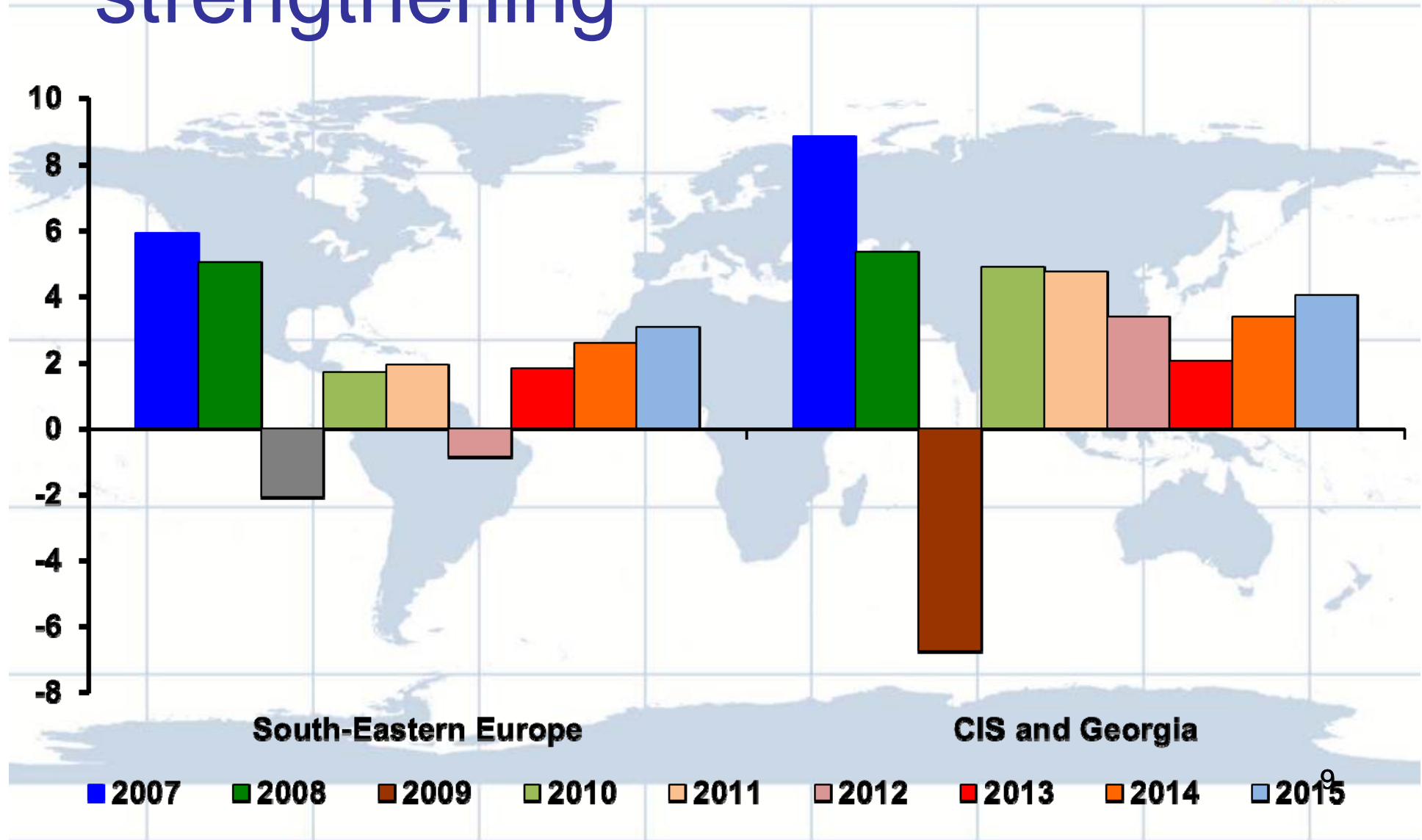# Developed economies: healing slowly in the aftermath of the financial crisis
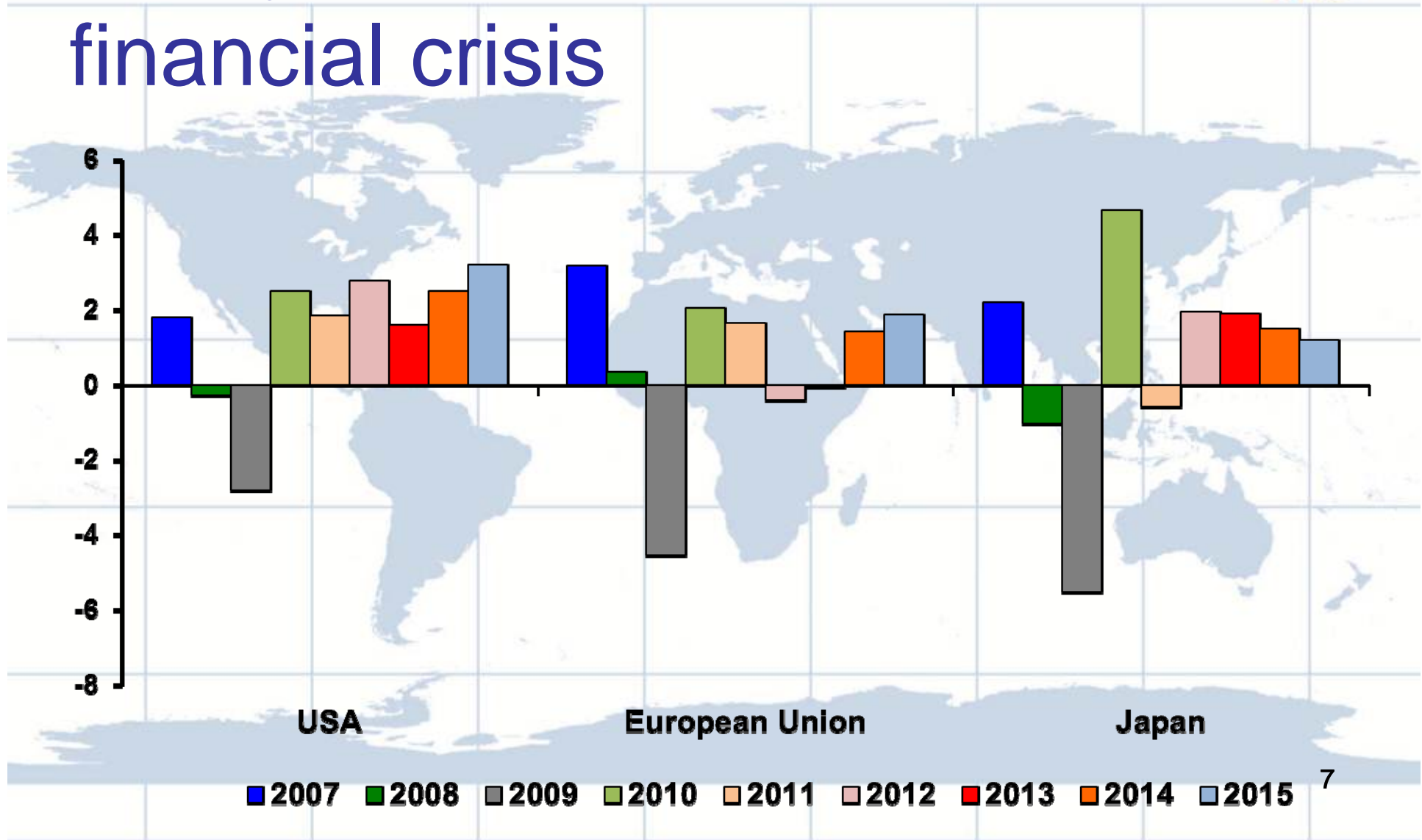
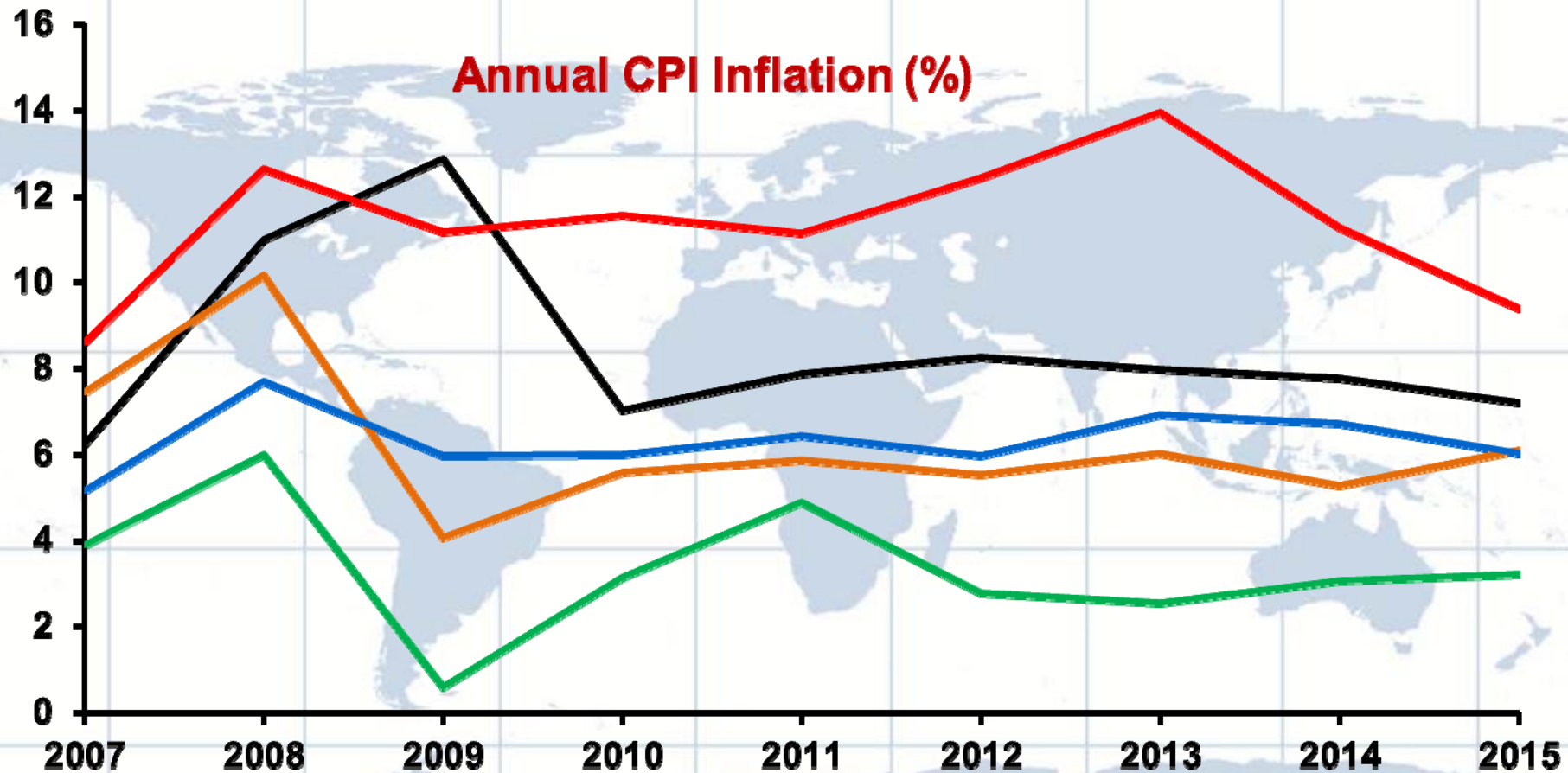# Developing countries: backstopping the growth moderation

Africa | East Asia | South Asia | Western Asia | Latin America and the Caribbean

■ 2007 ■ 2008 □ 2009 □ 2010 □ 2011 □ 2012 ■ 2013 ■ 2014 □ 2015

Economies in transition: some strengthening

South-Eastern Europe   CIS and Georgia

2007 2008 2009 2010 2011 2012 2013 2014 2015

Unemployment rates elevated

Monthly Unemployment Rate (%)

France
Germany
Portugal
Spain
United States

Jan-2007   Jan-2008   Jan-2009   Jan-2010   Jan-2011   Jan-2012   Jan-2013
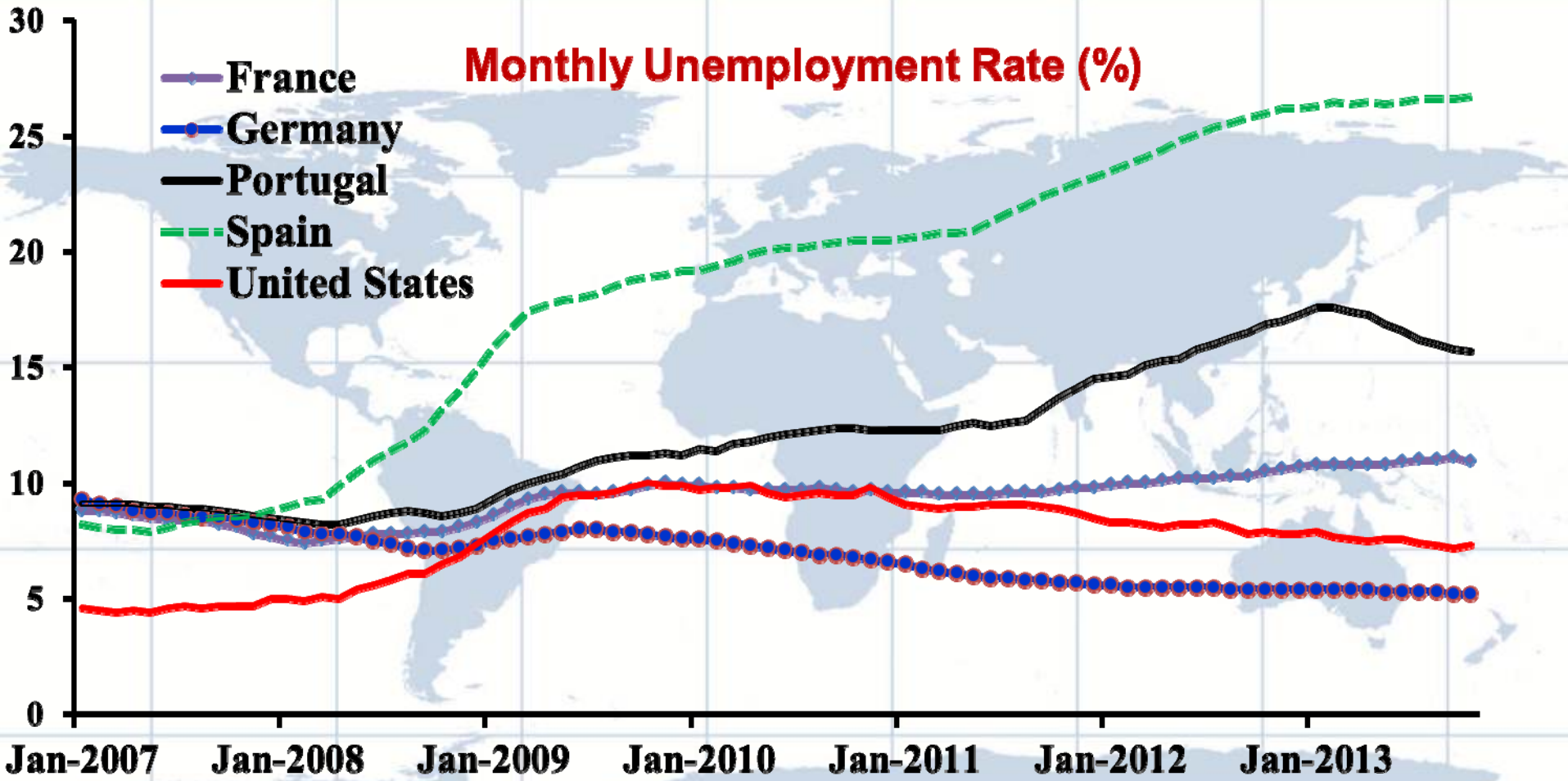
Inflation remains benign in most part of the world

Annual CPI Inflation (%)

Legend:
- Africa (excl. Zimbabwe)
- South Asia
- Latin America and the Caribbean
- East Asia
- Western Asia

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World trade growing at a sluggish pace

Index, Jan 2007 = 100

World
Advanced economies
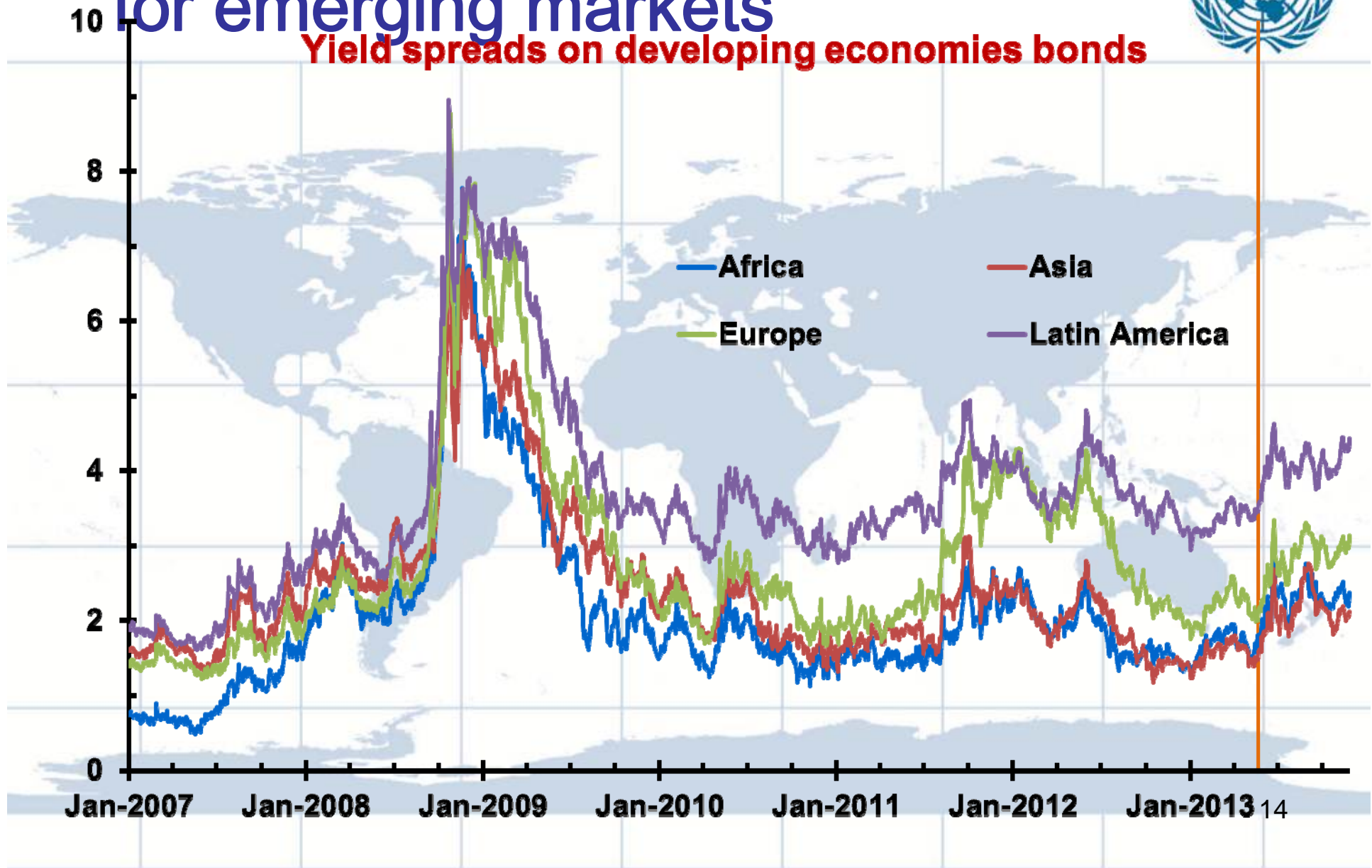Emerging economies

Commodity prices
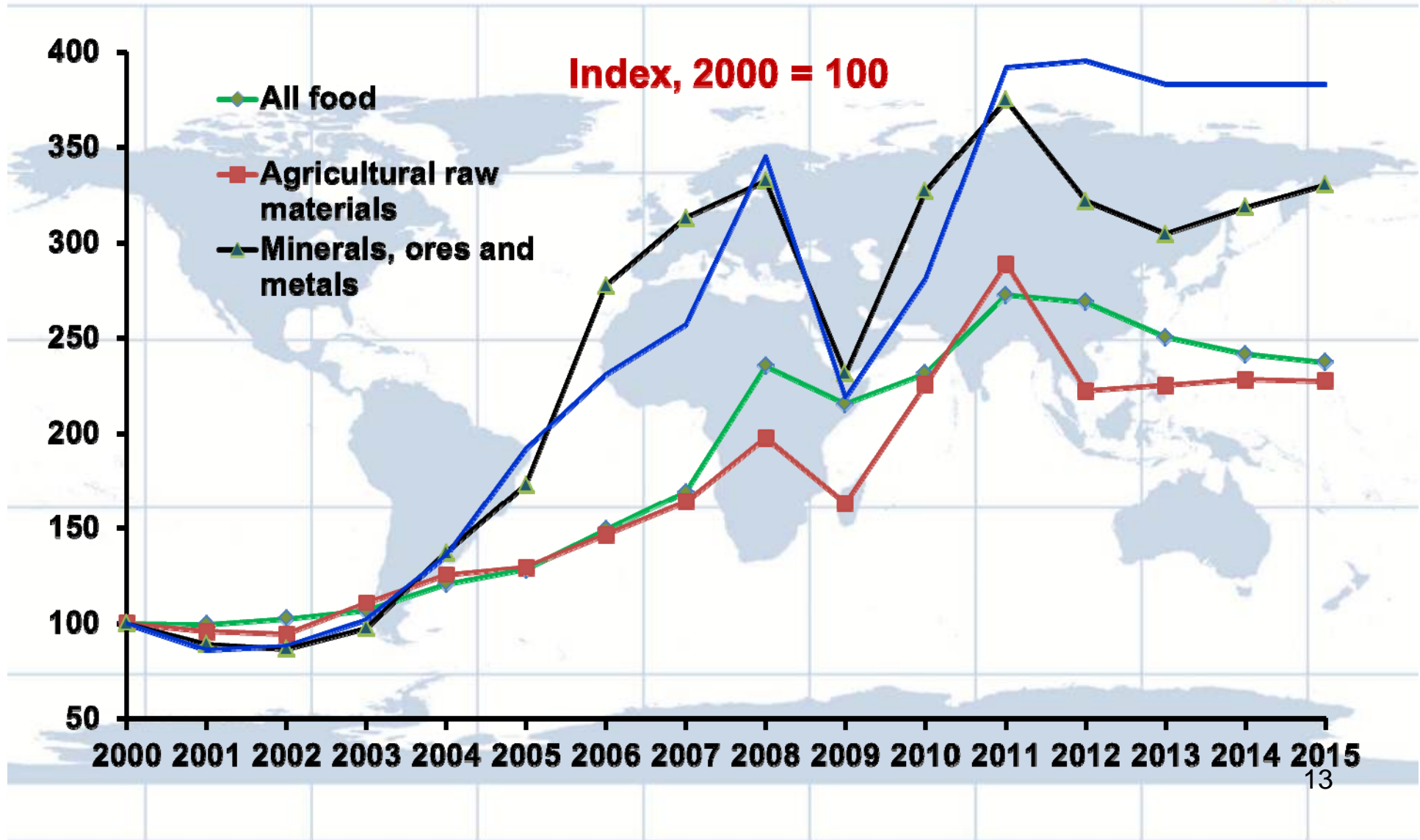
Increase in external financing costs for emerging markets

Yield spreads on developing economies bonds

Depreciation of currencies in emerging economies

Selected Asian currencies
Index, end 2011 = 100, vis-à-vis US dollar

— Indian rupee
— Indonesia rupiah
— Korean won
— Malaysian ringgit
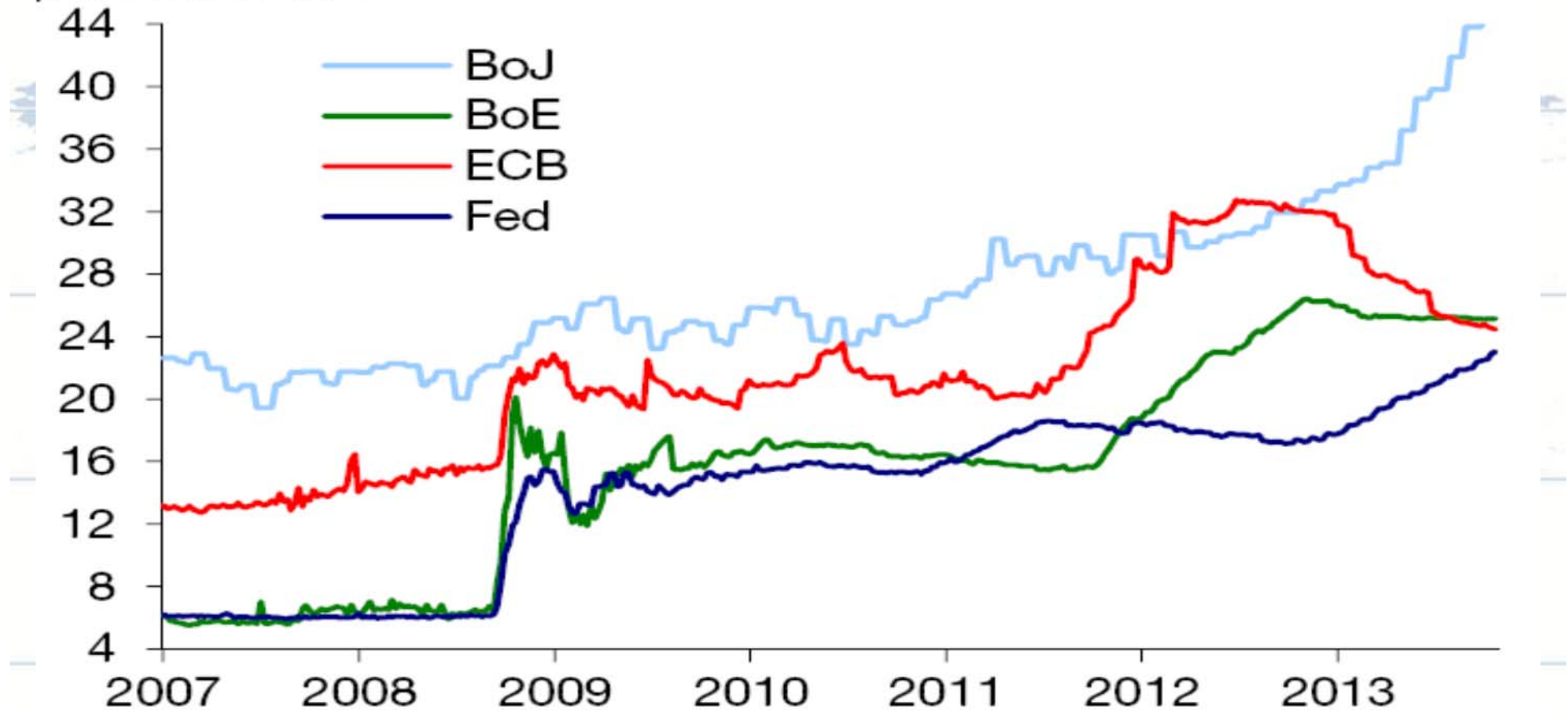
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Uncertainties and risks

- **Unwinding of the QE**
- **A hard landing for emerging economies**
- **Remaining fragility in euro area**
- **Fiscal policy in the United States**
- **Geopolitical risks**
- **Environmental disasters**

QE expanded central bank's assets

Total Assets of G4 Central Banks

percent of GDP

Legend:
- BoJ
- BoE
- ECB
- Fed

Effects of the QE

- **Positive: stabilizing financial markets, bailing-out banks, supporting economic recovery and jobs, good sill-overs to other economies;**

- **Negative: market distortion, repressing risk premium, moral hazard for banks, bad spill-overs to emerging economies.**

Risks of the QE exit: riding on a tiger's back

- **Premature and unsmooth exit will lead to:**

  Overshooting of long-term interest rates, shocks to financial markets and real economy, reversing capital inflows to emerging economies, and increasing their external financing costs.

- **Delayed exit will lead to:**

  asset bubbles and inflation

Overshooting of long-term interest rates

United States Treasury bond yields

10-Year
30-Year

Risks for a hard landing in emerging economies

- **Vulnerability of emerging economies to external shocks**

- **Challenges to overcome structural bottlenecks in their domestic economy**

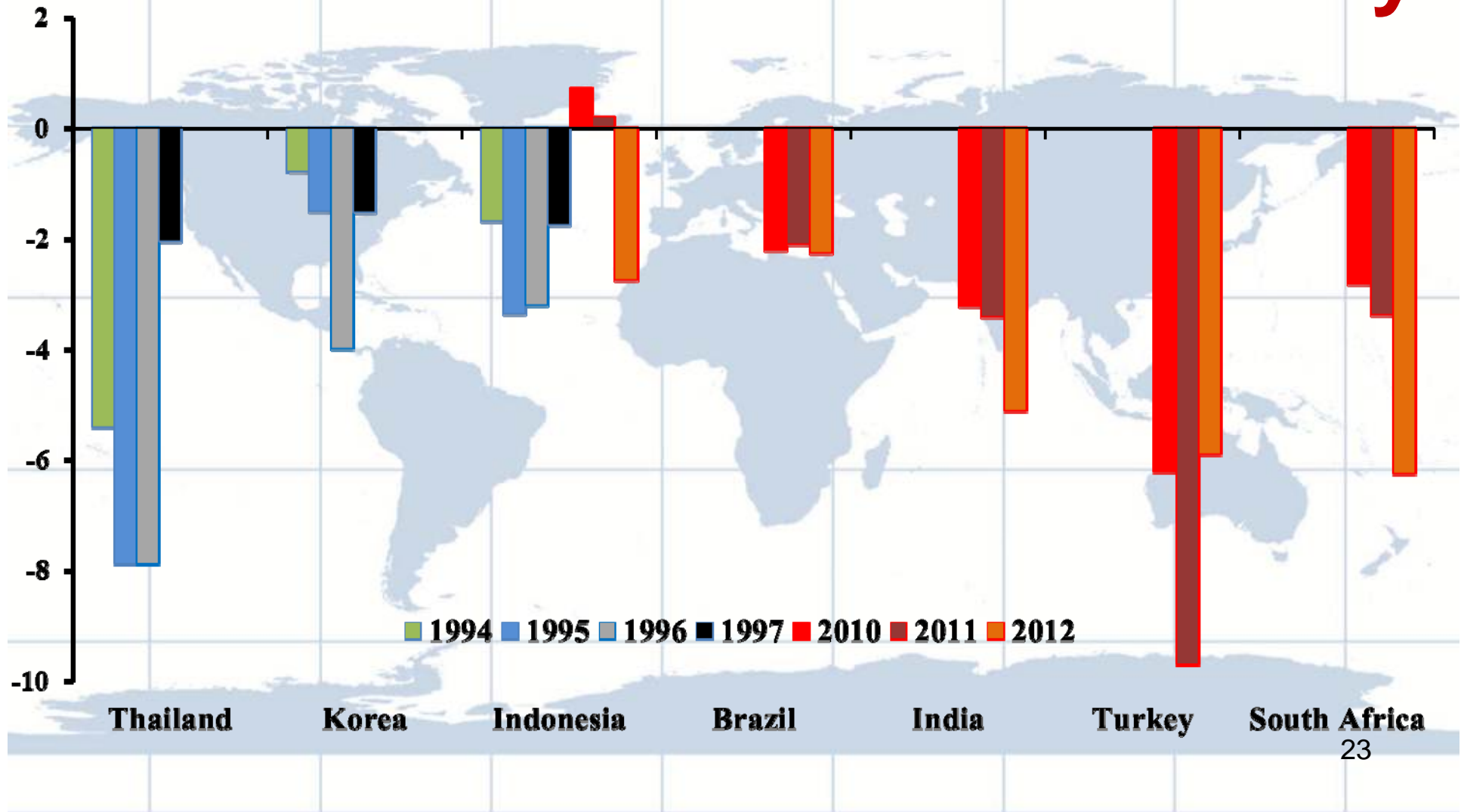# Vulnerability of emerging economies to external shocks

- **Reversal of capital inflows**
- **Current account balance**
- **External debt**
- **Foreign reserves**
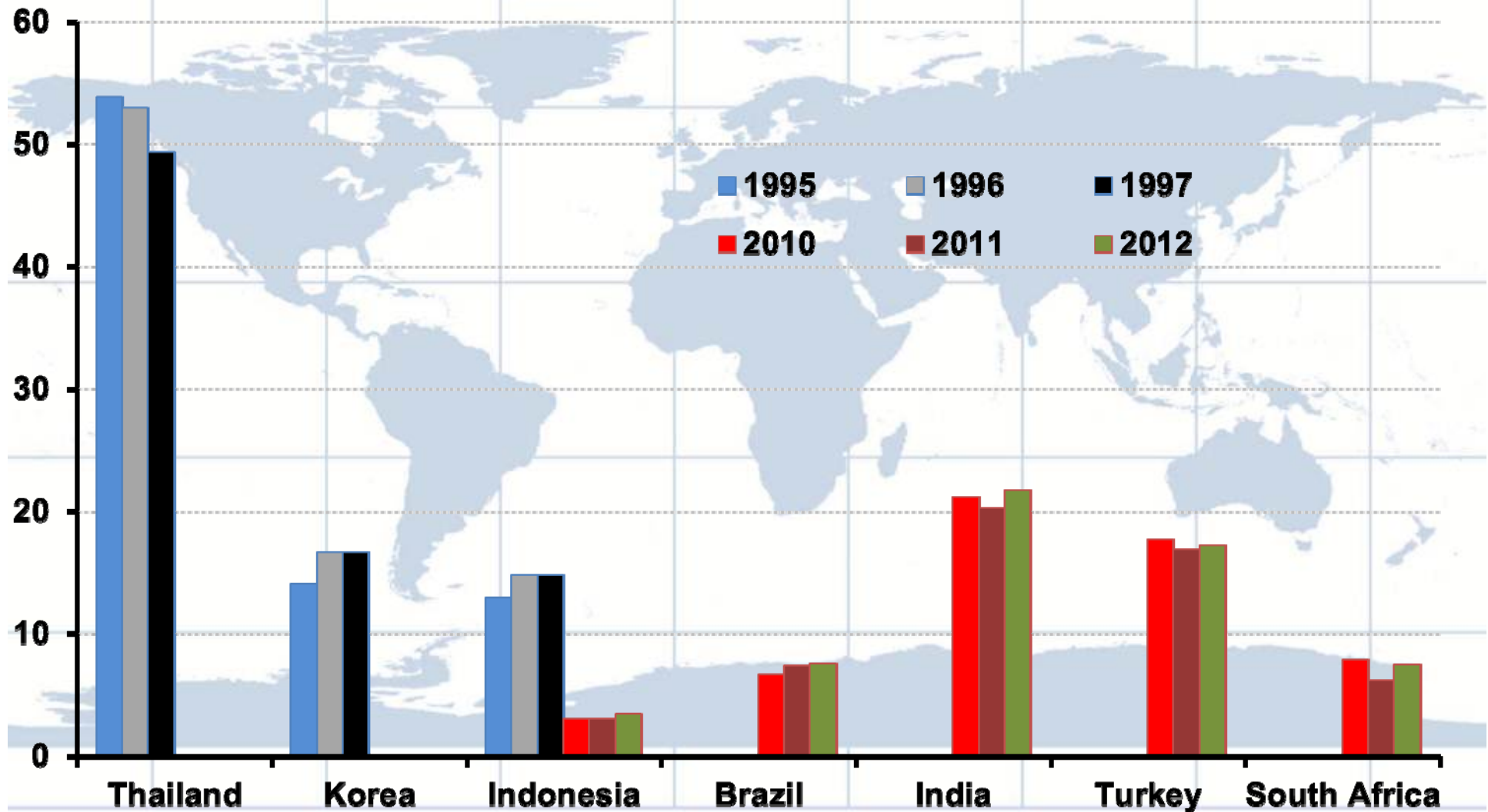- **Exchange rate regimes and macroeconomic policy space**

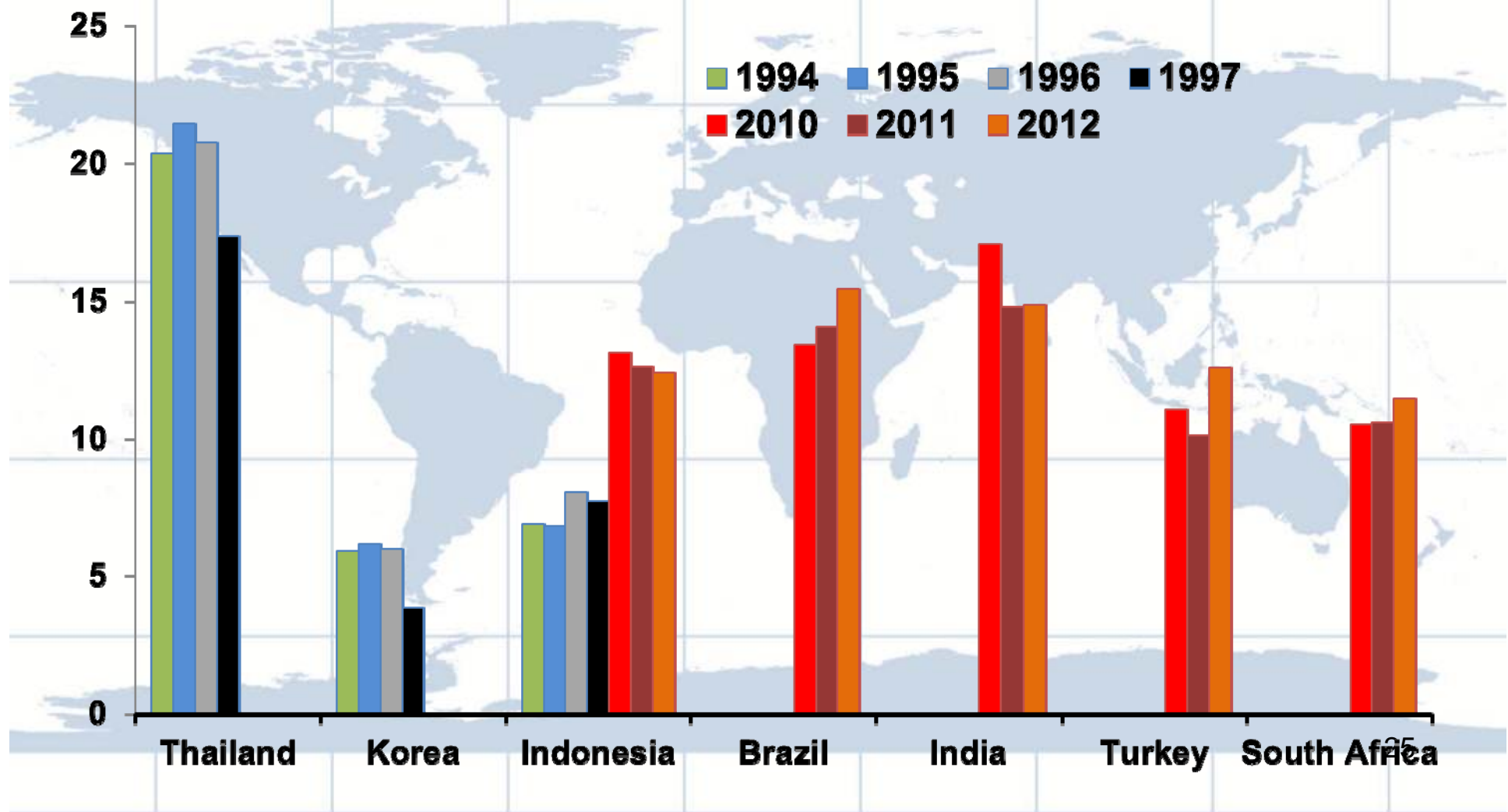# Current account/GDP: Asian financial crisis V.S. today

Legend: 1994, 1995, 1996, 1997, 2010, 2011, 2012

Countries: Thailand, Korea, Indonesia, Brazil, India, Turkey, South Africa

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External Debt/GDP: Asian financial crisis V.S. today

Foreign reserves/GDP: Asian financial crisis V.S. today

Legend: 1994, 1995, 1996, 1997, 2010, 2011, 2012

Categories: Thailand, Korea, Indonesia, Brazil, India, Turkey, South Africa

Policy challenges (1)

- **Macroeconomic policy stance more diverse across countries**

- **Developed economies:**

  A combination of fiscal tightening and monetary easing Current

  Japan exception (expansionary fiscal and monetary)

  Challenge: managing a smooth QE exit

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Policy challenges (2)

- **Developing countries and economies in transition:**

  Reducing vulnerability to a more challenging international economic condition

 **Meeting different needs in the domestic economy**

  Reforms to deal with structural impediments

Policy challenges (3)

- **International policy coordination:**

-Focus more on jobs

-Mitigate the spill-over effects of QE exit

-Manage global imbalances

-Ensure sufficient international resources to the LDCs to support the MDGs and post-2015 development agenda
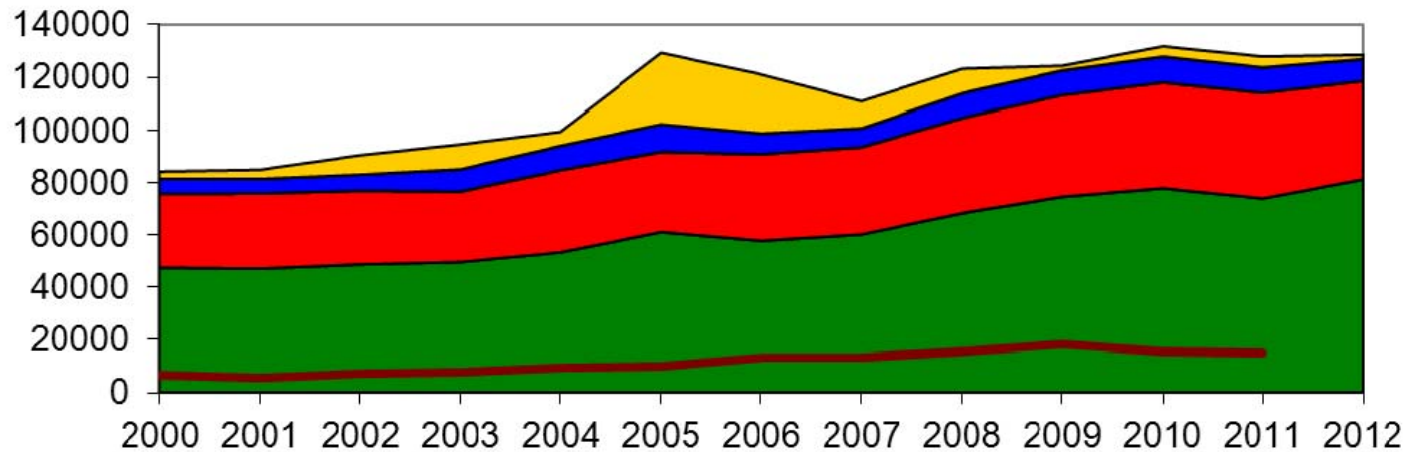
Global imbalances
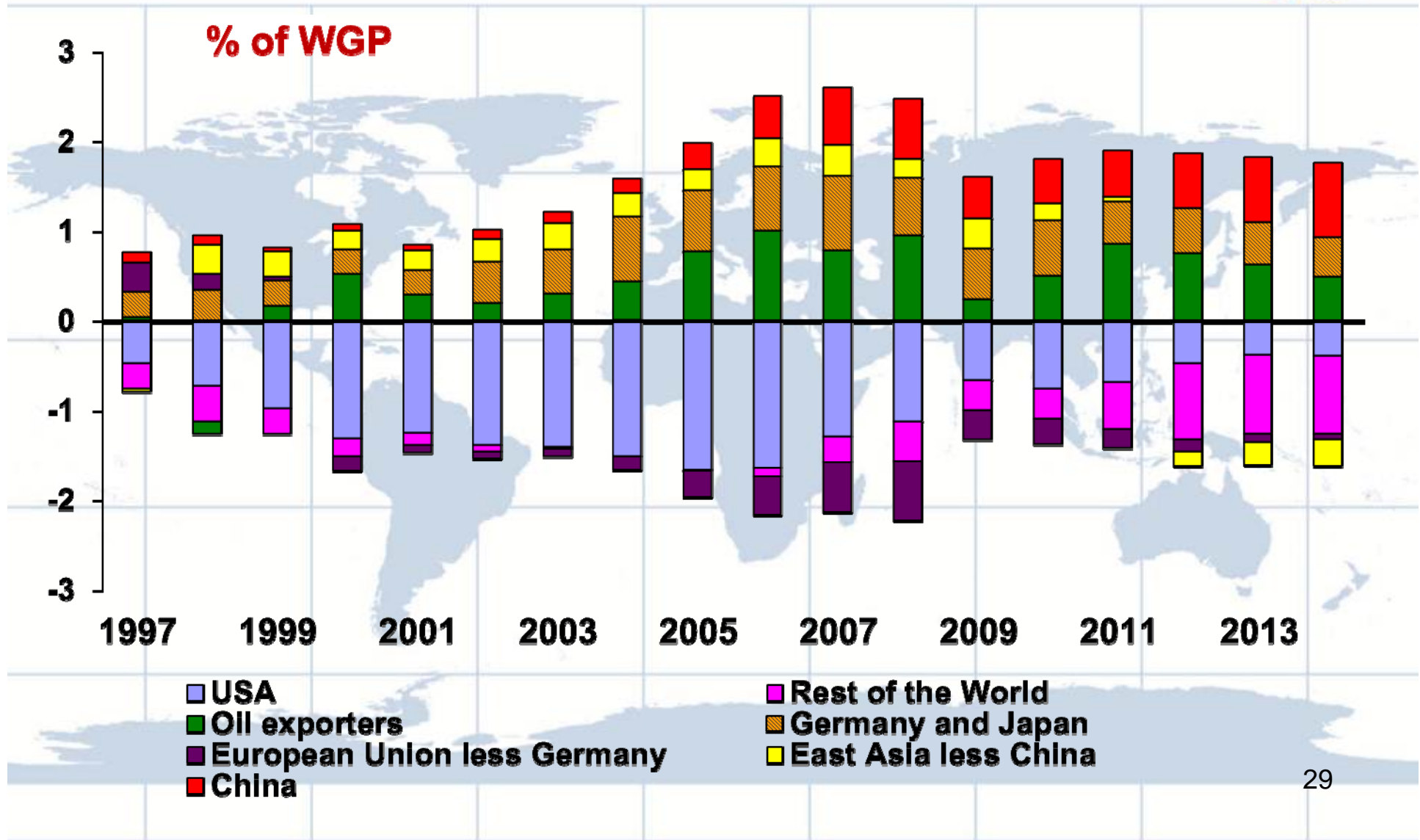
ODA flows declined in past two years

Trends in main components of ODA from DAC members, 2000-2012 (millions of 2011 constant dollars)

Legend:
- Net debt-forgiveness grants
- Humanitarian aid
- Multilateral ODA
- Bilateral development projects, programmes and technical co-operation
- Aid to basic social services

PART TWO
A comparative study of the forecasting performance of three international organizations

Outline for PART TWO

* **Background information about the forecasts by UN,IMF and World Bank**

* **Technical setting**

* **Evaluation of the UN forecasts for 1981-2012**

* **Comparing the forecasting performance of UN,IMF and the World Bank for 2000-2012:**

    Forecasting errors in global growth

    Forecasting errors in growth of developed and developing economies

    Forecasting errors in growth of selected individual countries

* **Explaining the poor forecasting for the Great Recession of 2009**

* **Concluding remarks**

Background information about the forecasts by three international organizations

* UN: *World Economic Situation and Prospects (WESP)*

   Project LINK and the LINK modeling system

   World Economic Forecasting Model

* IMF: *World Economic Outlook (WEO)*

* World Bank: *Global Economic Prospects (GEP)*

Technical setting

* f_t – forecast of GDP growth (%) for year t, as projected in t-1

* g_t – GDP growth for year t, as officially reported in year t+1 and t+2

* e_t =($(100+f_t)/(100+ g_t) - 1)*100$,forecasting error

* Biasness: $(\Sigma\, e_t)/T$

* Efficiency: *corr* (e_t, e_{t-1})

* Compare with random walk forecasting

* $RMSE = \sqrt{\sum_{i=1}^{T} e_i^2 \Big/ T}$ Root mean square error

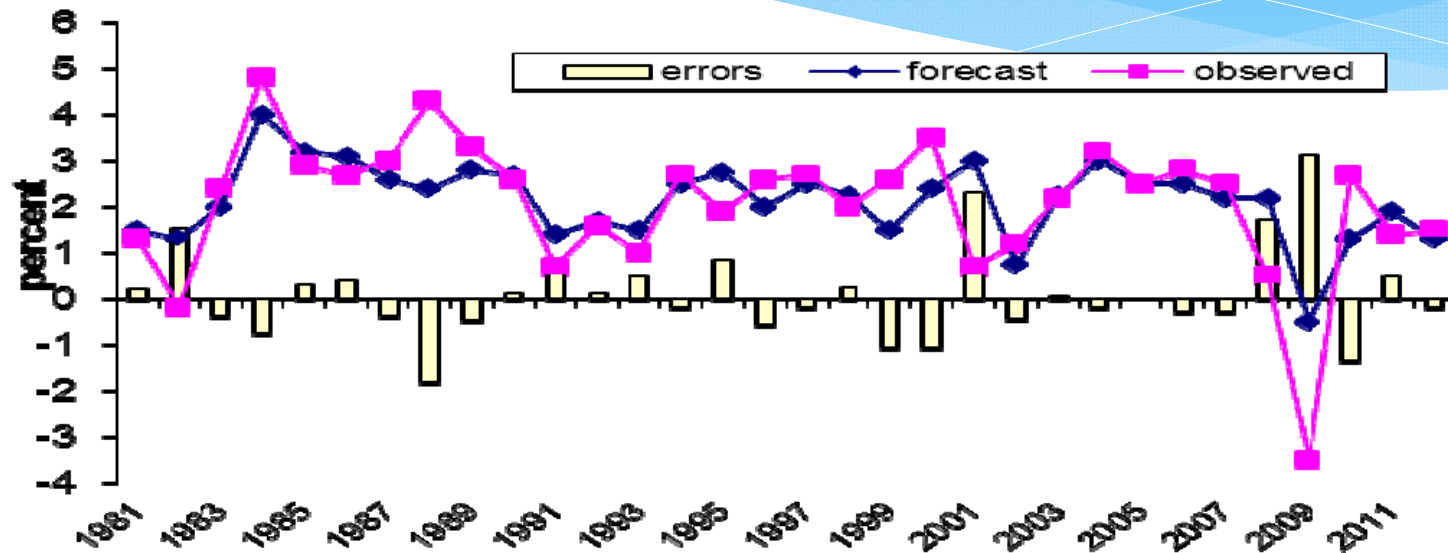* $MAE = \sum_{i=1}^{T} |e_i| \Big/ T$ Mean absolute error

Evaluation of UN forecasts(1)
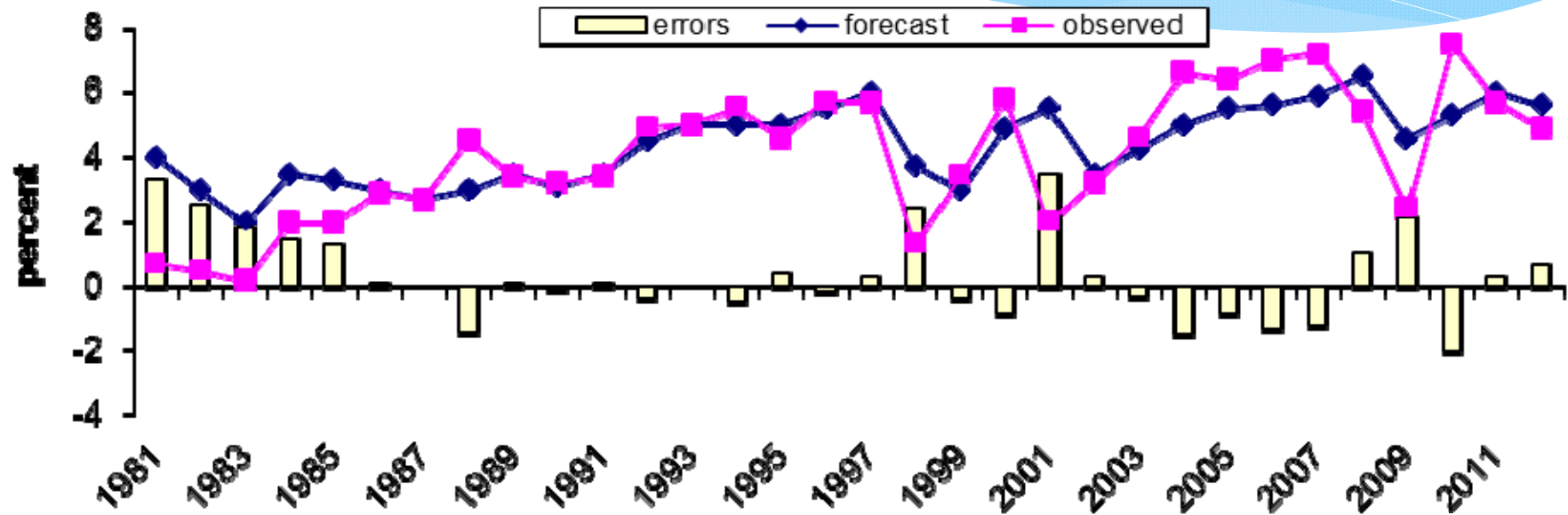## Growth of World Gross Product (1981-2012)
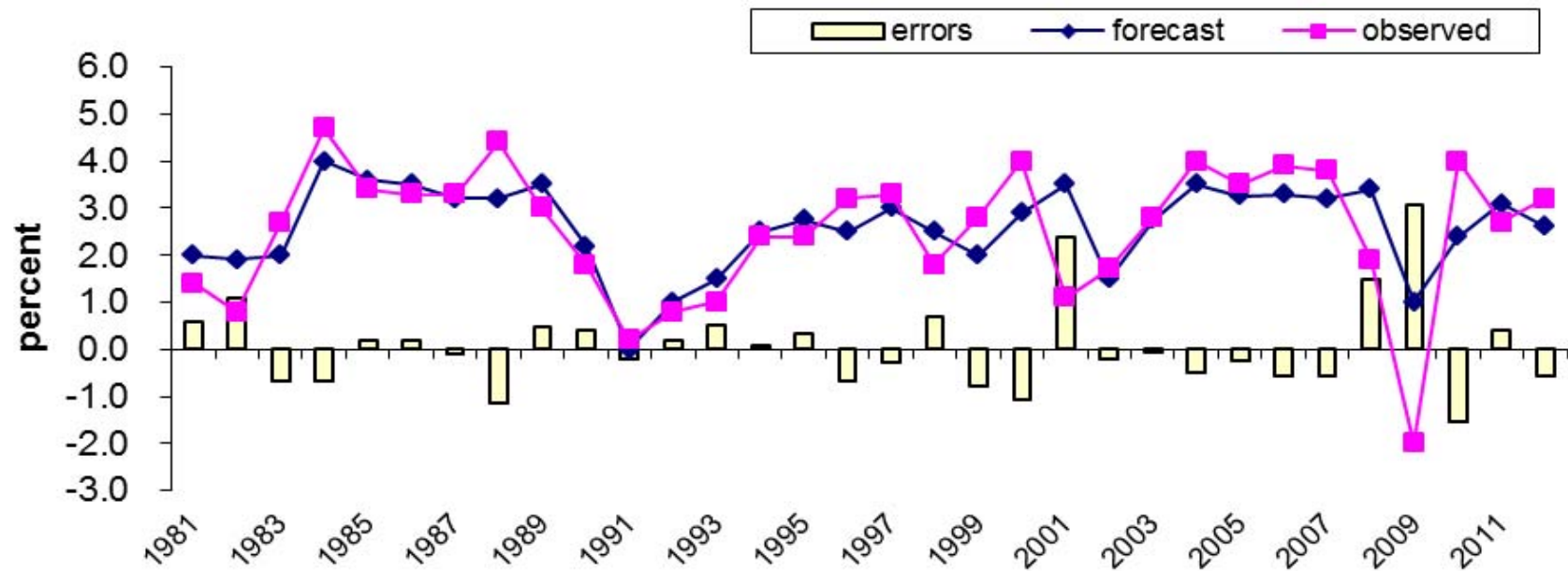
Evaluation of UN forecasts(2)
GDP growth of developed countries (1981-2012)

Evaluation of UN forecasts(3)
GDP growth of developing countries (1981-2012)

Evaluation of UN forecasts(4) Statistics summary

	world		developed countries		developing countries	
	model	random walk	model	random walk	model	random walk
Mean	0.07	-0.03	0.09	0.02	0.21	-0.15
p value	0.62	0.92	0.6	0.96	0.23	0.65
Median	-0.07	-0.05	-0.1	0.05	0	-0.14
p value	1.00	0.85	1.00	1.00	0.85	0.57
Maximum	3.06	3.98	3.11	4.15	3.43	4.34
Minimum	-1.54	-5.77	-1.82	-6.04	-2.05	-4.74
Standard deviations	0.97	1.75	1.04	1.86	1.3	1.83
Skewness	1.25	-0.65	0.96	-0.77	0.64	0.35
Kurtosis	4.97	5.67	4.29	5.42	2.93	4.02
Jarque-Bera	12.7	10.98	6.68	10.28	2.06	1.91
Probability	0.00	0.00	0.04	0.01	0.36	0.39
Number of positive errors	15	15	16	15	18	14
Fraction of positive errors	0.48	0.5	0.52	0.5	0.58	0.47
serial correlation	-0.14	-0.28	-0.07	-0.33	0.24	-0.35
p value	0.41	0.11	0.68	0.06	0.17	0.05
root of mean square errors	0.95	1.72	1.01	1.83	1.41	1.8
mean absolute errors	0.68	1.23	0.71	1.34	1.02	1.3
mean absolute percentage errors	38.2	79.37	69.24	103.55	87.66	49.3
Mean equal test (model VS random walk)		p=0.74		p=0.83		p=0.27
Median equal test (model VS random walk)		p=0.9		p=0.9		p=0.51
Variance equal test (model VS random walk)		p=0.00		p=0.00		p=0.15

Comparing the forecasts of UN, IMF and WB (1)
Errors in forecasting growth of world gross product (2000-2012)

Percentage points
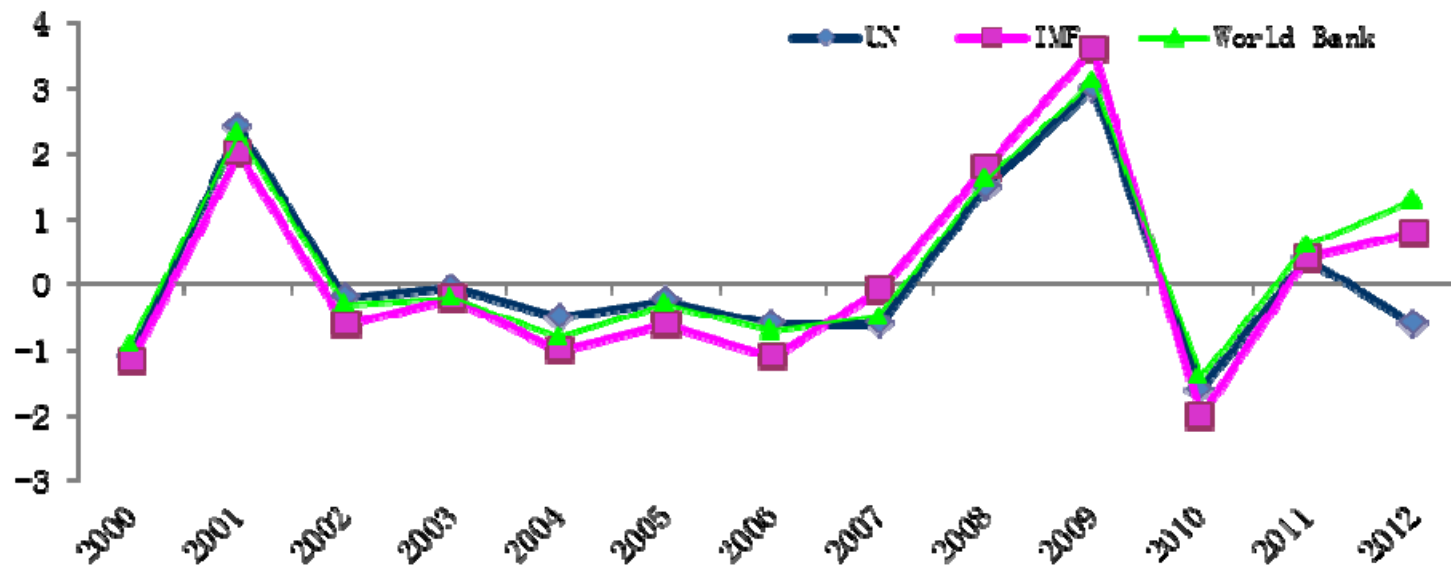
corr(UN, IMF)=0.93,   corr(UN,WB)=0.92,   corr(IFM,WB)=0.98

Comparing the forecasts of UN, IMF and WB (2)
Errors in forecasting growth of world gross product
Statistics summary

	UN		IMF		World Bank	
	model	random walk	model	random walk	model	random walk
Mean	0.21	0.03	0.09	-0.02	0.22	0.04
p value	0.62	0.97	0.85	0.97	0.59	0.96
Median	-0.22	-0.14	-0.38	-0.14	-0.29	-0.10
p value	0.39	1.00	0.39	1.00	0.39	1.00
Maximum	3.06	3.98	3.62	3.62	3.17	3.99
Minimum	-1.54	-5.77	-1.90	-5.42	-1.34	-6.05
Standard deviations	1.39	2.46	1.58	2.30	1.40	2.50
Skewness	0.94	-0.68	1.01	-0.70	1.01	-0.85
Kurtosis	2.77	3.93	3.11	3.87	2.75	4.26
Jarque-Bera	1.81	1.36	2.06	1.36	2.08	2.23
Probability	0.40	0.51	0.36	0.51	0.35	0.33
Number of positive errors	4	6	4	6	4	6
Fraction of positive errors	0.33	0.50	0.33	0.50	0.33	0.50
serial correlation	-0.22	-0.39	-0.11	-0.37	-0.15	-0.41
p value	0.40	0.13	0.66	0.15	0.56	0.11
root of mean square errors	1.35	2.36	1.52	2.20	1.36	2.40
mean absolute errors	0.99	1.72	1.17	1.63	1.04	1.71
mean absolute percentage errors	49.14	76.10	75.00	86.82	50.70	74.76
Mean equal test (model VS random walk)		p=0.83		p=0.89		p=0.82
Median equal test (model VS random walk)		p=1.00		p=1.00		p=1.00
Variance equal test (model VS random walk)		p=0.07		p=0.23		p=0.07
Statistics equal test (UN VS IMF)	Mean	p=0.84	Median	p=1.00	Variance	p=0.67
Statistics equal test (UN VS World Bank)	Mean	p=0.98	Median	p=0.41	Variance	p=0.98
Statistics equal test (IMF VS World Bank)	Mean	p=0.82	Median	p=1.00	Variance	p=0.69

Comparing the forecasts of UN, IMF and WB (3)
Errors in forecasting GDP growth of developed countries (2000-2012)

Percentage points
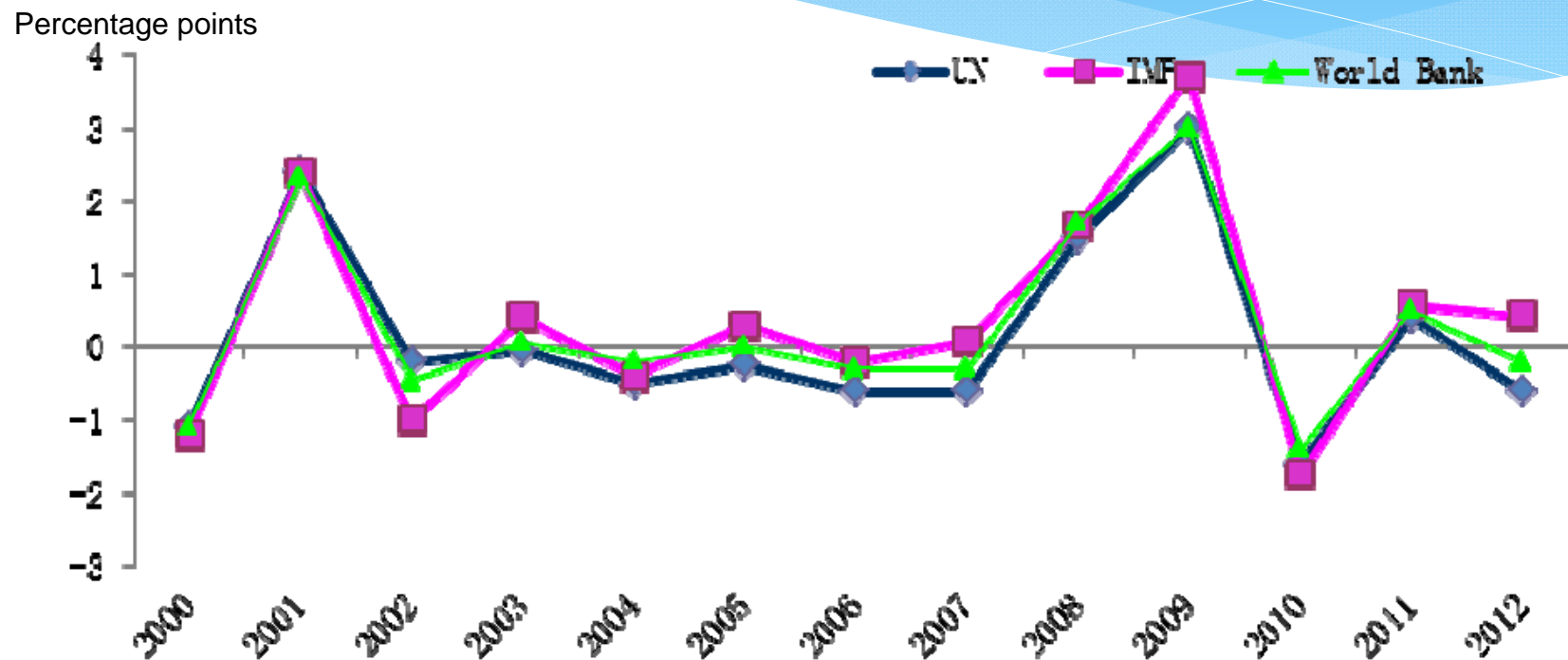
Comparing the forecasts of UN, IMF and WB (4)
Errors in forecasting GDP growth of developed countries
Statistics summary

	UN		IMF		World Bank	
	model	random walk	model	random walk	model	random walk
Mean	0.34	0.14	0.39	0.16	0.38	0.12
p value	0.40	0.86	0.41	0.83	0.39	0.87
Median	-0.10	0.0004	0.19	0.0004	-0.10	0.05
p value	1.00	1.00	0.77	1.00	0.55	1.00
Maximum	1.35	2.53	1.56	2.55	1.41	2.53
Minimum	3.11	4.15	3.79	3.93	3.42	3.93
Standard deviations	-1.36	-6.04	-1.72	-6.11	-1.17	-6.21
Jarque-Bera	1.51	2.33	1.35	2.64	2.04	3.28
Probability	0.47	0.31	0.51	0.27	0.36	0.19
Fraction of positive errors	0.42	0.50	0.58	0.50	0.33	0.50
serial correlation	-0.27	-0.40	-0.35	-0.43	-0.19	-0.39
p value	0.30	0.12	0.18	0.10	0.47	0.13
root of mean square errors	1.34	2.43	1.54	2.45	1.40	2.43
mean absolute errors	0.95	1.74	1.13	1.75	1.00	1.69
mean absolute percentage errors	79.37	120.53	75.96	109.13	88.68	126.21
Mean equal test (model VS random walk)		p=0.81		p=0.80		p=0.76
Median equal test (model VS random walk)		p=1.00		p=1.00		p=1.00
Variance equal test (model VS random walk)		p=0.05		p=0.12		p=0.06
Statistics equal test (UN VS IMF)	Mean	p=0.94	Median	p=0.41	Variance	p=0.65
Statistics equal test (UN VS World Bank)	Mean	p=0.94	Median	p=1.00	Variance	p=0.89
Statistics equal test (IMF VS World Bank)	Mean	p=0.99	Median	p=0.22	Variance	p=0.78

Comparing the forecasts of UN, IMF and WB (5)
Errors in forecasting GDP growth of developing countries (2000-2012)

Percentage points
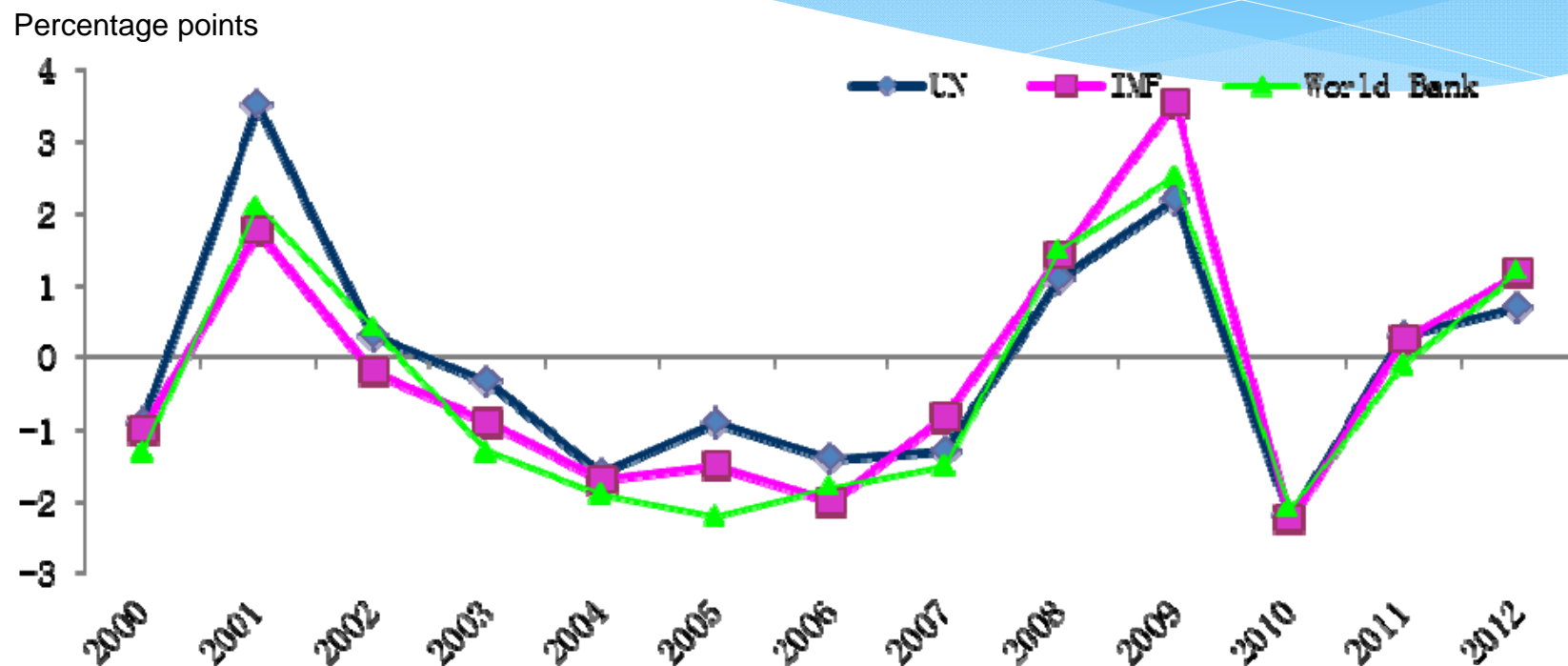
Comparing the forecasts of UN, IMF and WB (6)
Errors in forecasting GDP growth of developing countries
Statistics summary

	UN		IMF		World Bank	
	model	random walk	model	random walk	model	random walk
Mean	-0.10	-0.18	-0.26	-0.19	-0.42	0.14
p value	0.84	0.80	0.60	0.84	0.39	0.89
Median	-0.59	-0.37	-0.79	-0.37	-1.23	0.00
p value	0.55	0.77	0.39	1.00	0.55	1.00
Maximum	1.61	2.37	1.66	2.06	1.63	2.53
Minimum	3.43	3.73	3.46	3.41	2.45	4.15
Standard deviations	-2.05	-4.74	-2.07	-4.47	-2.06	-6.04
Jarque-Bera	1.87	0.11	2.06	0.11	1.49	2.33
Probability	0.39	0.95	0.36	0.94	0.47	0.31
Fraction of positive errors	0.33	0.42	0.33	0.42	0.33	0.50
serial correlation	0.15	-0.41	0.05	-0.32	0.15	-0.40
p value	0.56	0.11	0.85	0.22	0.56	0.12
root of mean square errors	1.55	2.27	1.61	1.98	1.62	2.43
mean absolute errors	1.25	1.84	1.35	1.53	1.47	1.74
mean absolute percentage errors	35.44	49.62	29.70	33.66	34.83	44.92
Mean equal test (model VS random walk)		p=0.92		p=0.93		p=0.53
Median equal test (model VS random walk)		p=1.00		p=0.41		p=0.41
Variance equal test (model VS random walk)		p=0.22		p=0.48		p=0.16
Statistics equal test (UN VS IMF)	Mean	p=0.81	Median	p=1.00	Variance	p=0.93
Statistics equal test (UN VS World Bank)	Mean	p=0.63	Median	p=0.41	Variance	p=0.97
Statistics equal test (IMF VS World Bank)	Mean	p=0.81	Median	p=0.41	Variance	p=0.96

Comparing the forecasts of UN and IMF for selected individual countries (1)
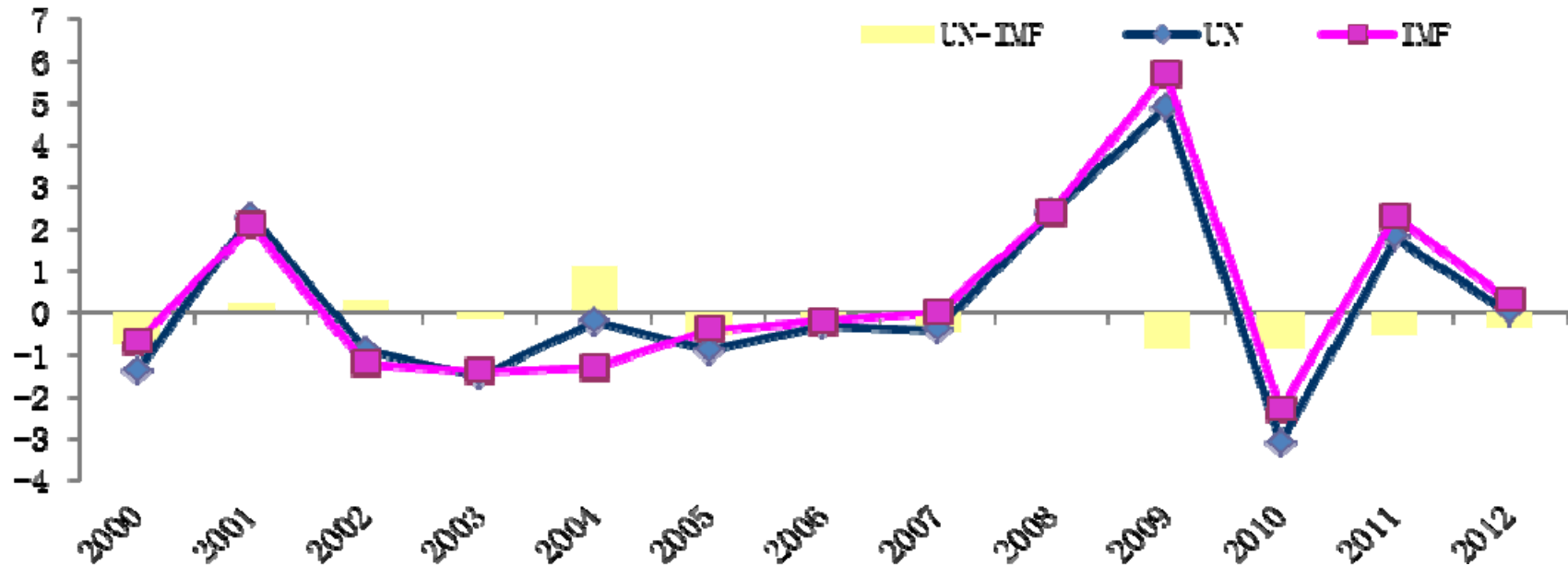## Errors in forecasting GDP growth of *the U.S.* (2000-2012)

Percentage points
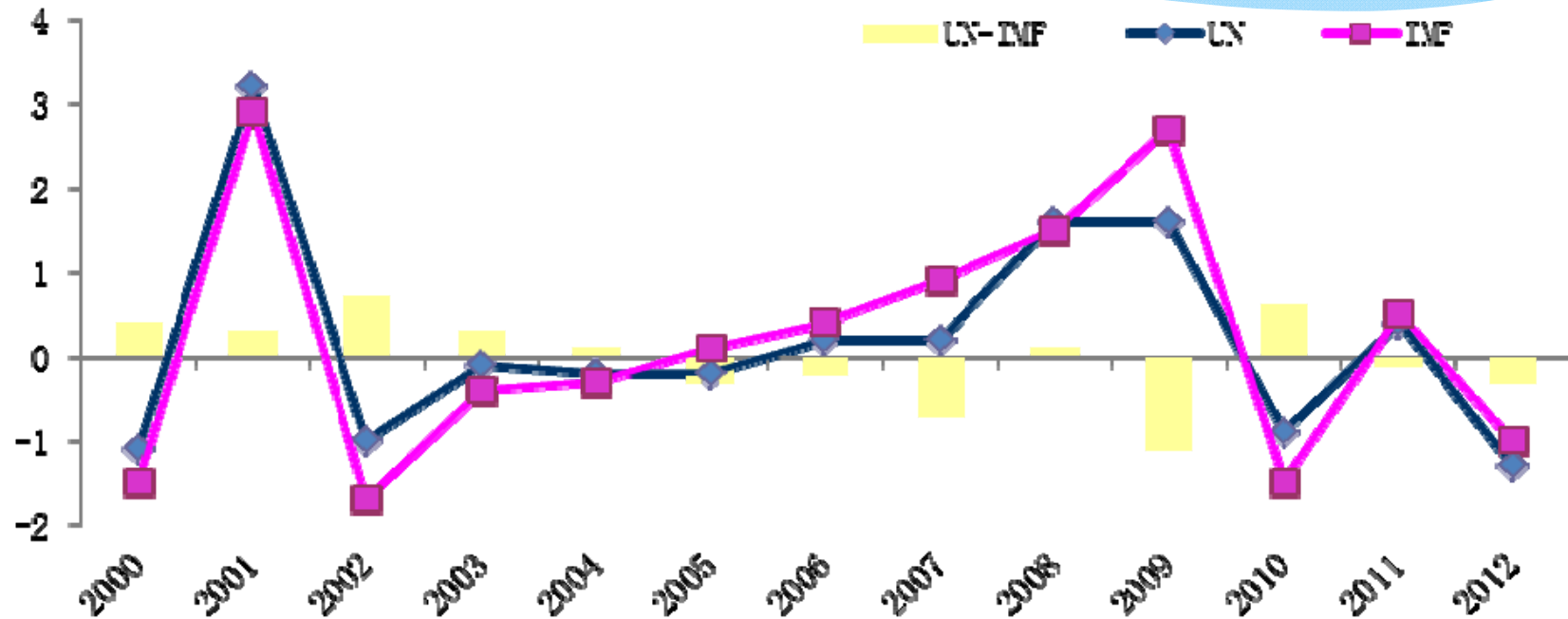
Comparing the forecasts of UN and IMF for selected individual countries (2)
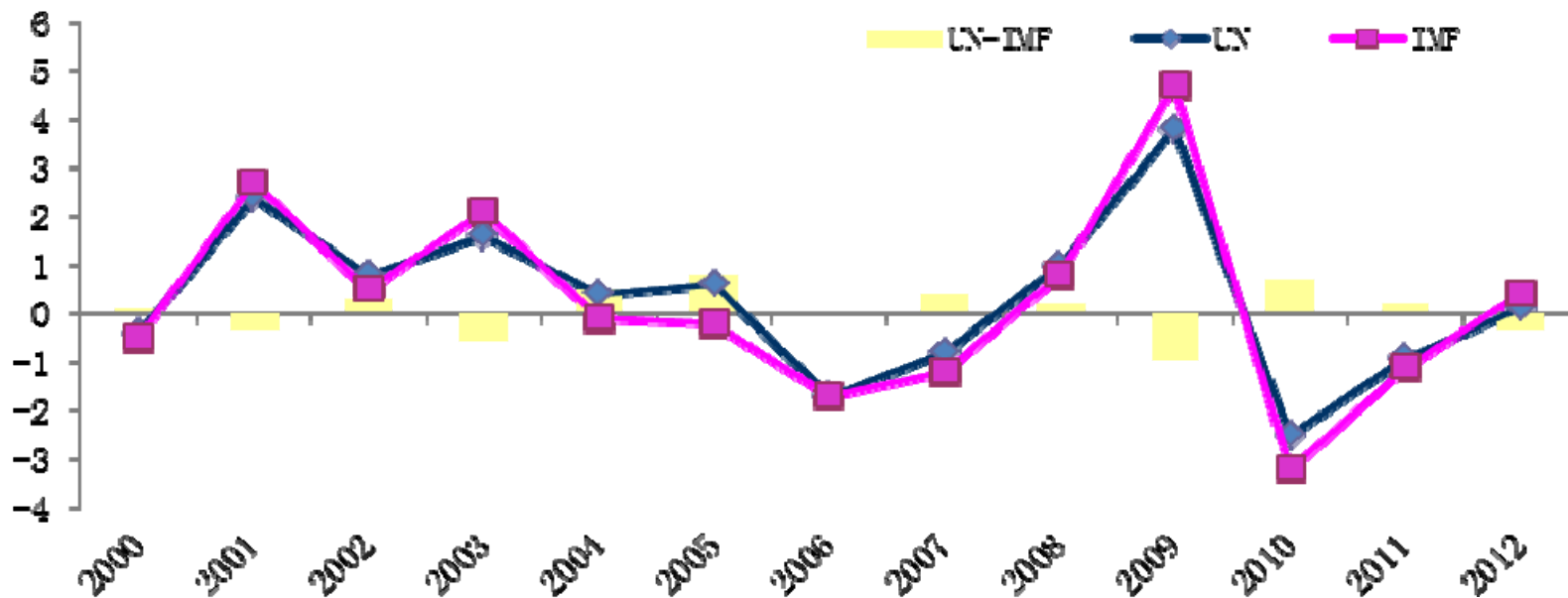## Errors in forecasting GDP growth of *Japan* (2000-2012)

Percentage points

Comparing the forecasts of UN and IMF for selected individual countries (3)
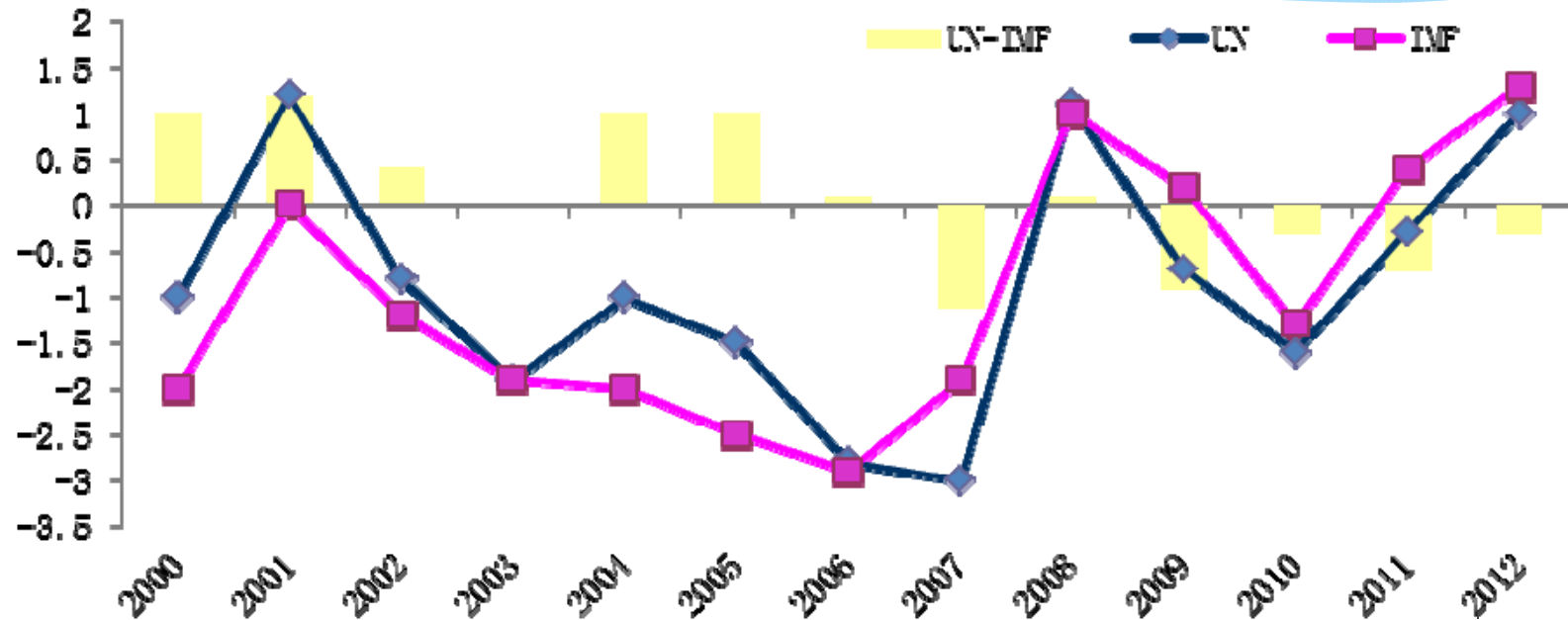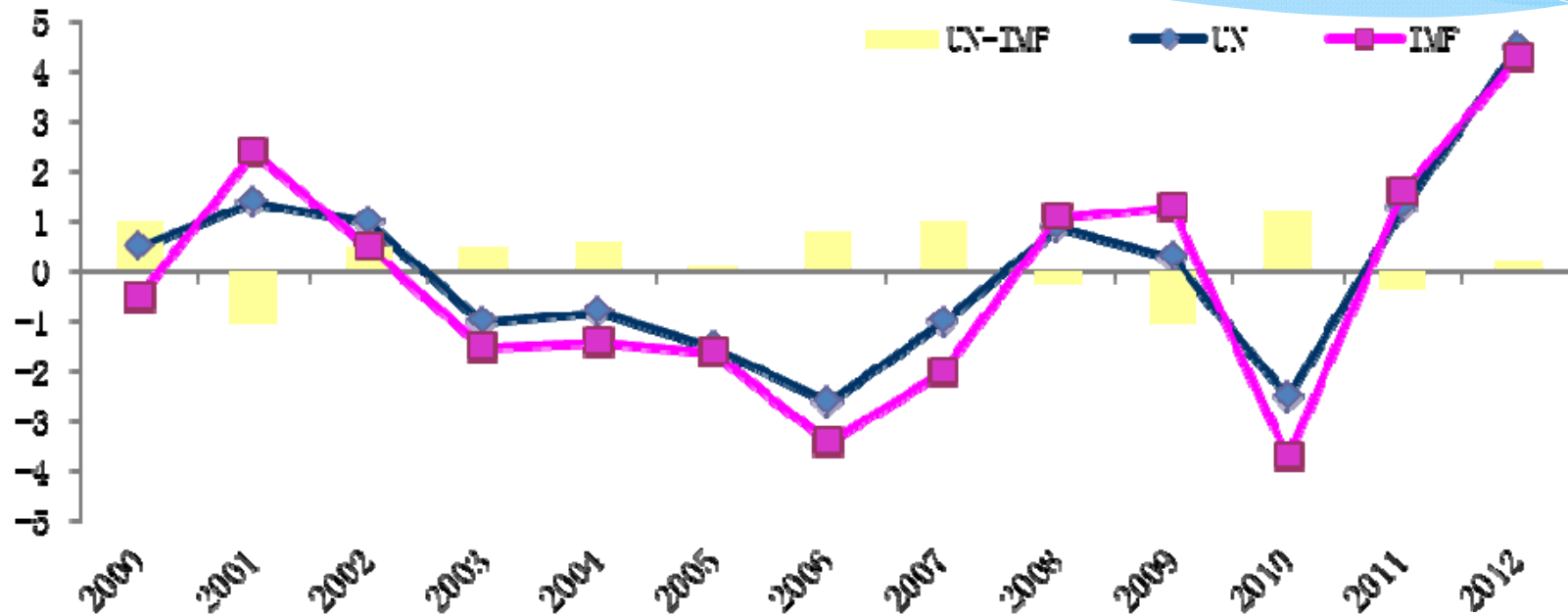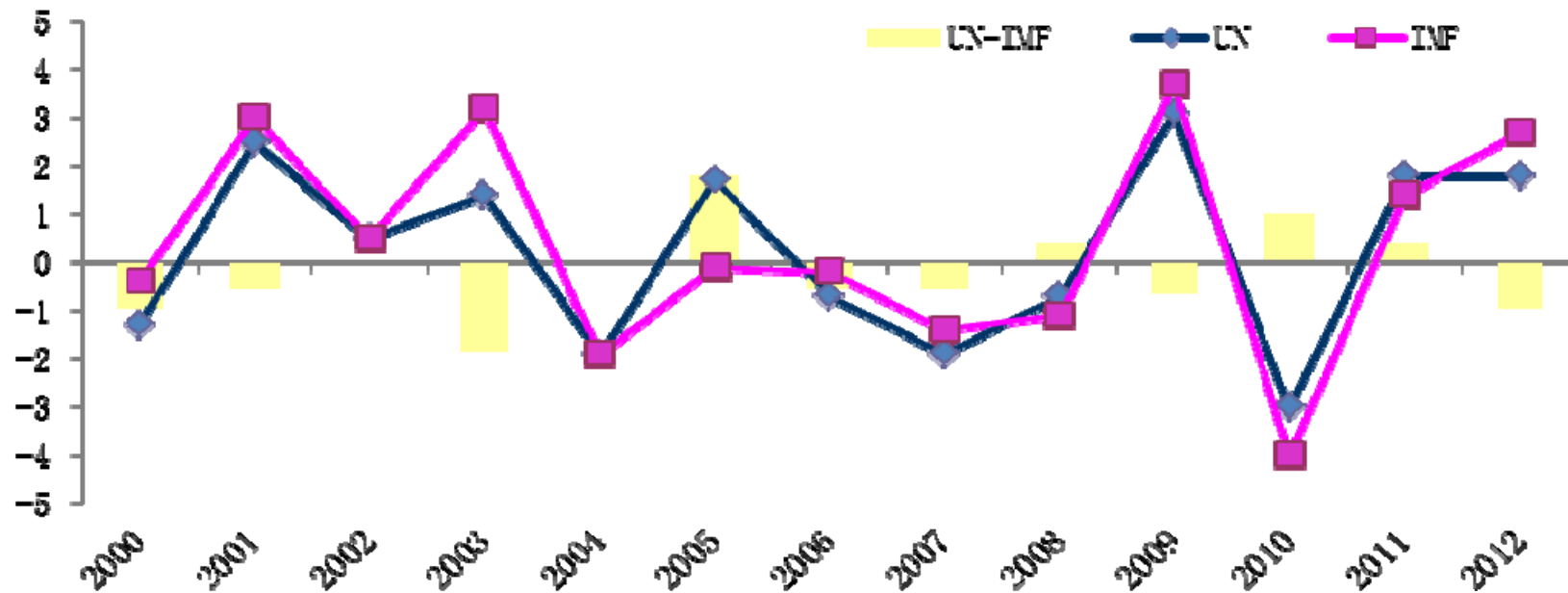## Errors in forecasting GDP growth of *Germany* (2000-2012)

Percentage points

Comparing the forecasts of UN and IMF for selected individual countries (4)
Errors in forecasting GDP growth of *China* (2000-2012)

Percentage points

Comparing the forecasts of UN and IMF for selected individual countries (5)
Errors in forecasting GDP growth of *India* (2000-2012)

Percentage points

Comparing the forecasts of UN and IMF for selected individual countries (6)
Errors in forecasting GDP growth of *Brazil* (2000-2012)

Percentage points

Comparing the forecasts of UN and IMF for selected 10 individual countries
Statistics summary of errors in forecasting GDP growth

|	UN	IMF	
Mean	0.07	0.08	Mean equal test
p value	0.87	0.88	p=0.99
Median	-0.13	-0.46	Median equal test
p value	0.39	0.77	p=0.41
Maximum	3.84	4.63	Variance equal test
Minimum	-1.69	-1.94	p=0.64
Standard deviations	1.51	1.75	
Skewness	1.28	1.51	
Kurtosis	4.22	4.85	
Jarque-Bera	4.03	6.25	
Probability	0.13	0.04	
Number of positive errors	4	5	
Fraction of positive errors	0.33	0.42	
Serial correlation	-0.17	-0.20	
p value	0.50	0.45	
Root of mean square error	1.45	1.68	
Mean absolute error	1.05	1.23	

Explaining the failure to predict the Great Recession of 2009

* Increased financial complexity, and malodorous practices and chicaneries in high finance in the run up to the financial crisis (securitization, sub-prime)

* Unprecedented acuteness in the damages to financial intermediation when the crisis erupted

* Extraordinary impact on the real economy (sharp decline investment and consumption)

* Unparalleled international contagion and transmission (trade and financial flows)

* Baseline forecasts versus alternative scenarios

Increased financial complexity and chicanery in high finance in the run up to the global financial crisis

Issuance of Subprime Mortgage-Backed Securities, 1995–2010

Billions of dollars
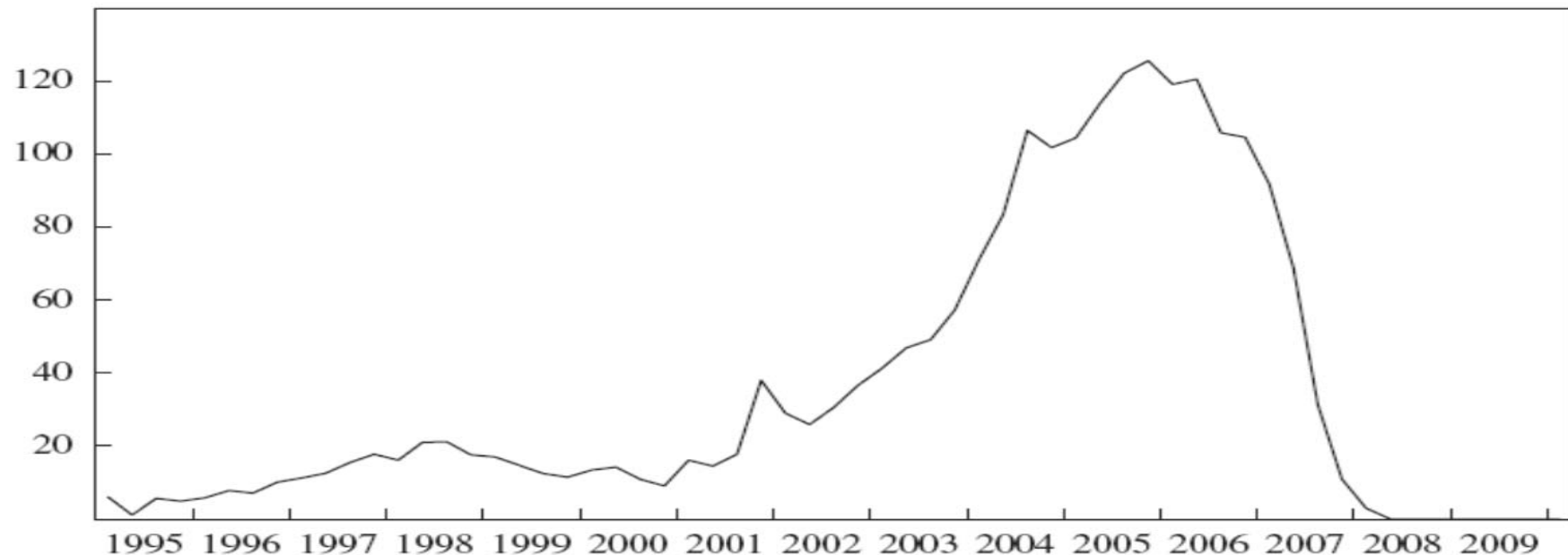
Source: *Inside Mortgage Finance.*
a. Quarterly data, seasonally adjusted.

Source: Greenspan (2010)

Unprecedented acuteness in the damages to financial intermediation when the crisis erupted
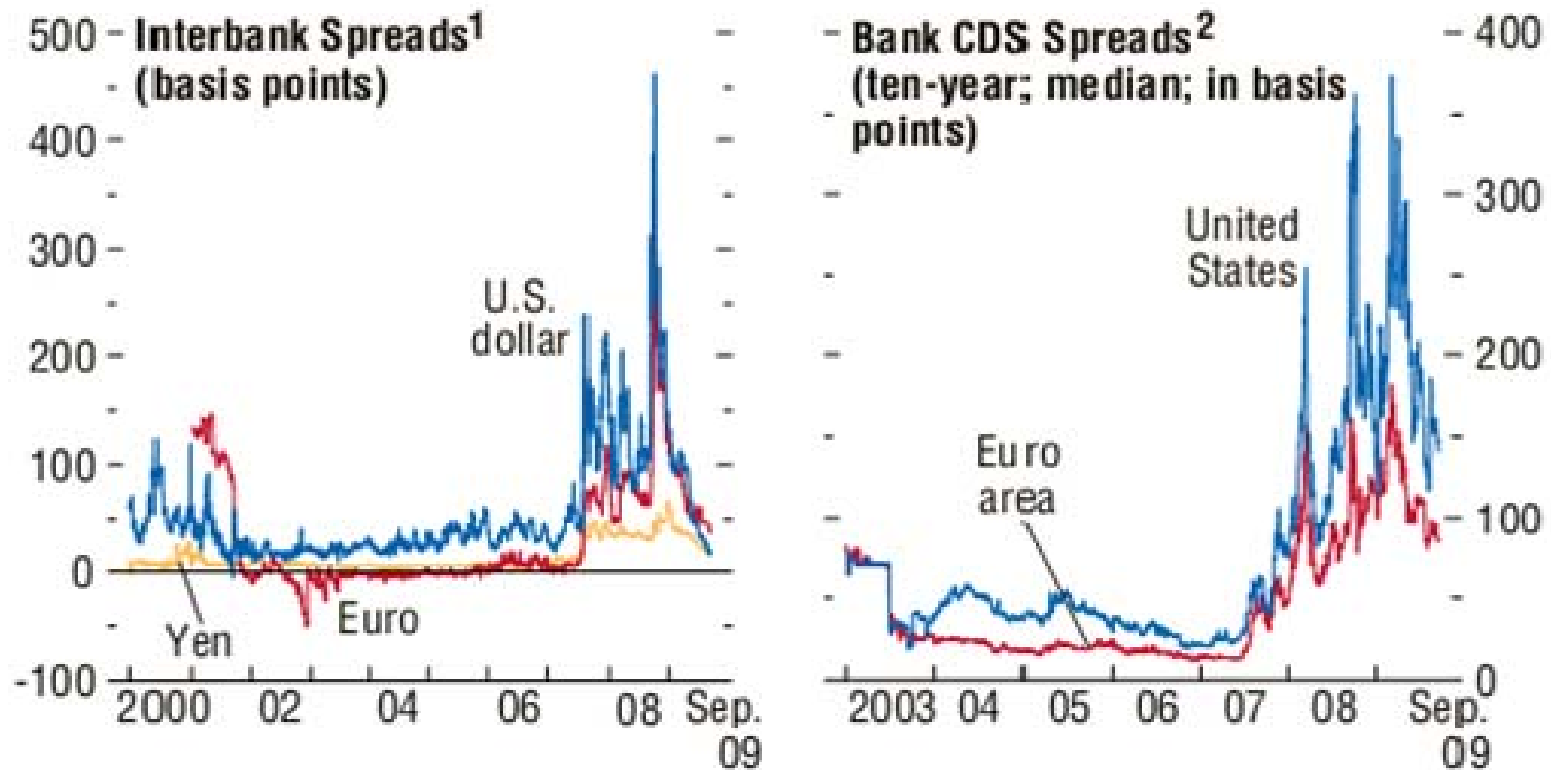
Sources: IMF World Economic Outlook (2009).
1. Three-month London interbank offered rate minus three-month government bill rate.
2. CDS: credit default swap.

Extraordinary impact on the real economy
(business investment and imports in the U.S.)

Changes from the Second Quarter of 2008 in Four Components of Real GDP during the Crisis

Net exports

Government purchases

Consumption: nondurables and services

Investment: Consumer durables, business, residential
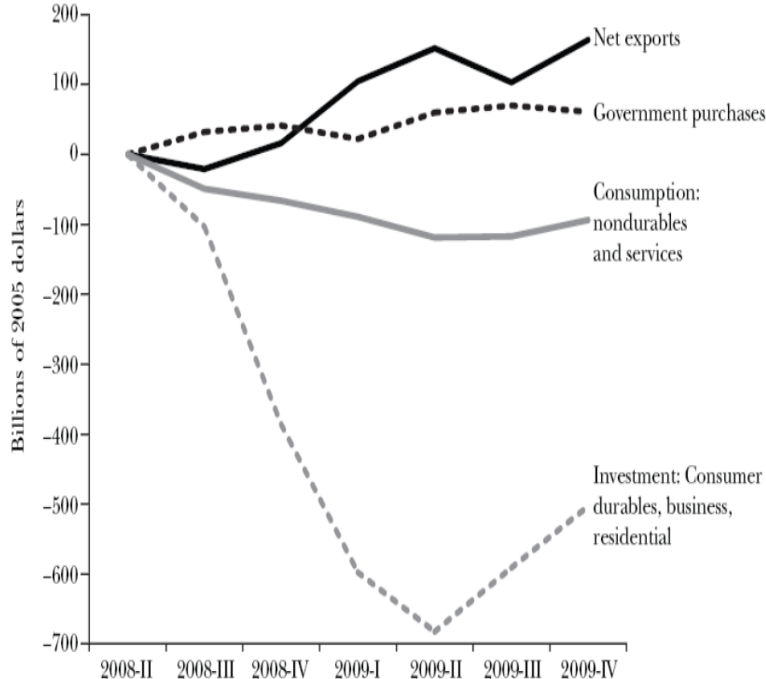
Source: U.S. National Income and Product Accounts, Table 1.1.6.

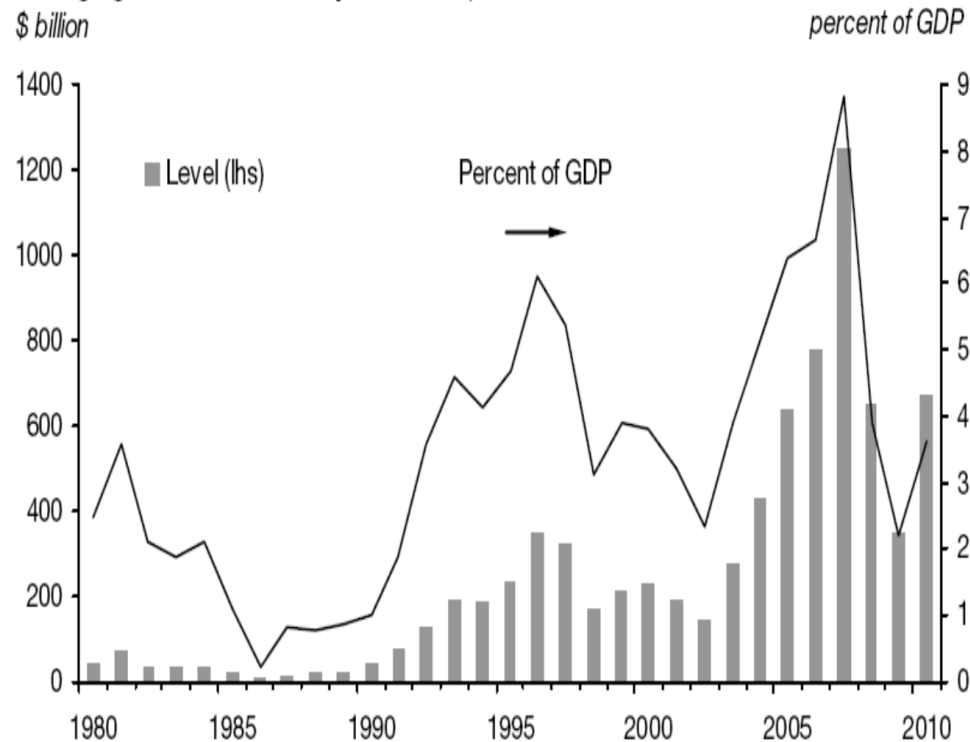Annual change of investment and import (%)

— Nonresidential investment — Imports
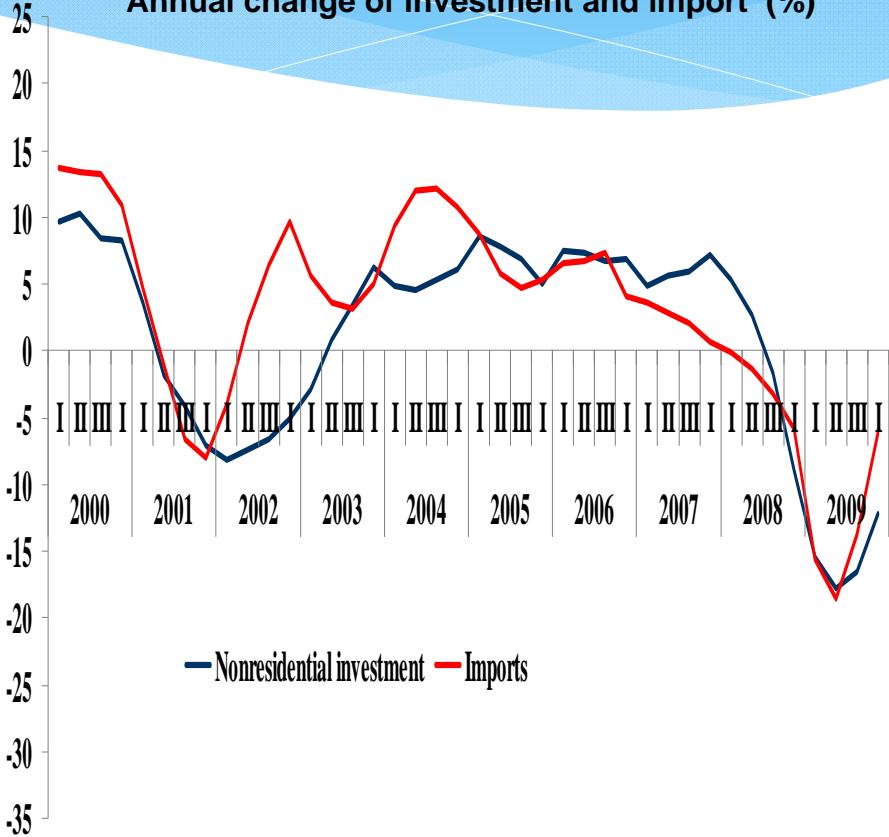
Source: Robert Hall (2010)

Unparalleled international contagion and transmission
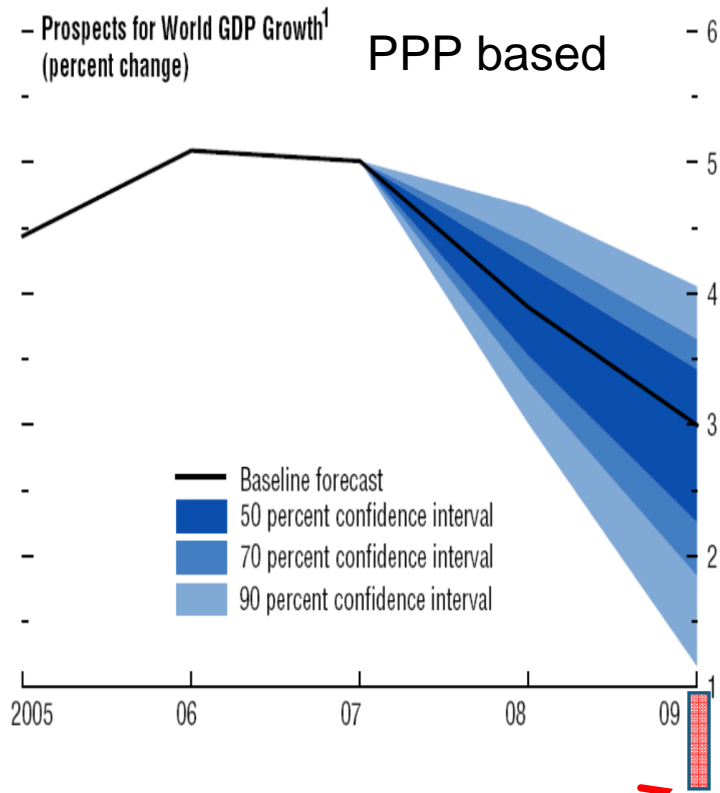## (international trade and financial flows)
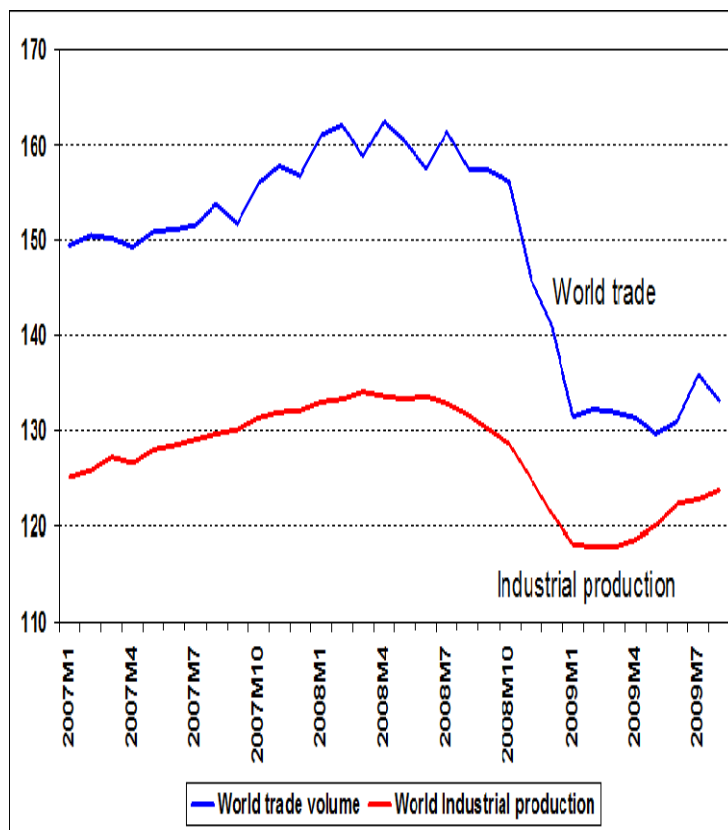
Source: IIF

Baseline forecasts versus alternative scenarios

IMF: WEO for 2009

UN: WESP for 2009

PPP based

Exchange rate based

Actual growth rate → -0.5

Actual growth rate → -2.0
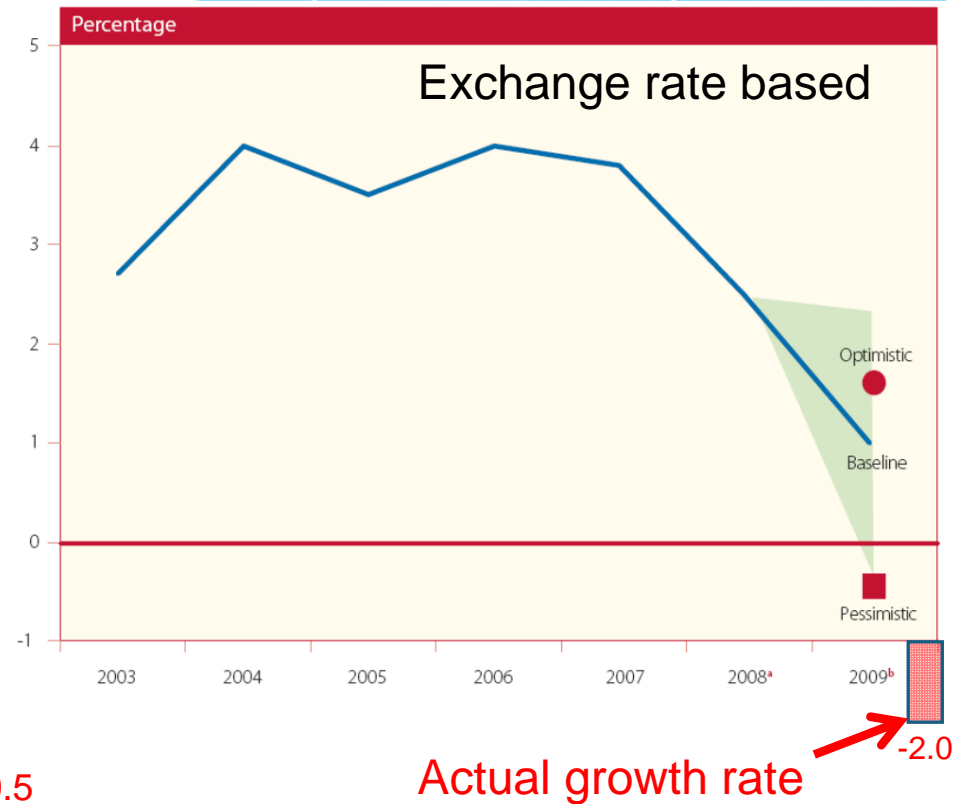
Concluding remarks for PART TWO

* Forecasts of the three international organizations in the past decade are statistically unbiased, efficient and better than random-walk forecasts

* The forecasting errors of the three organizations are not significantly different, while the UN forecasts are marginally better than the other two in terms of RMSR and MAE

* All three organizations failed to predict the eruption of the global financial crisis and the Great Recession of 2009.

* The complexity of the financial system, the impact of the financial crisis on the real economy, and the international linkages are the areas for improvement