BUILDING OF THE SYSTEM OF CRISIS PHENOMENA INDICES BASED ON RUSSIAN ZERO-COUPON YIELD CURVE

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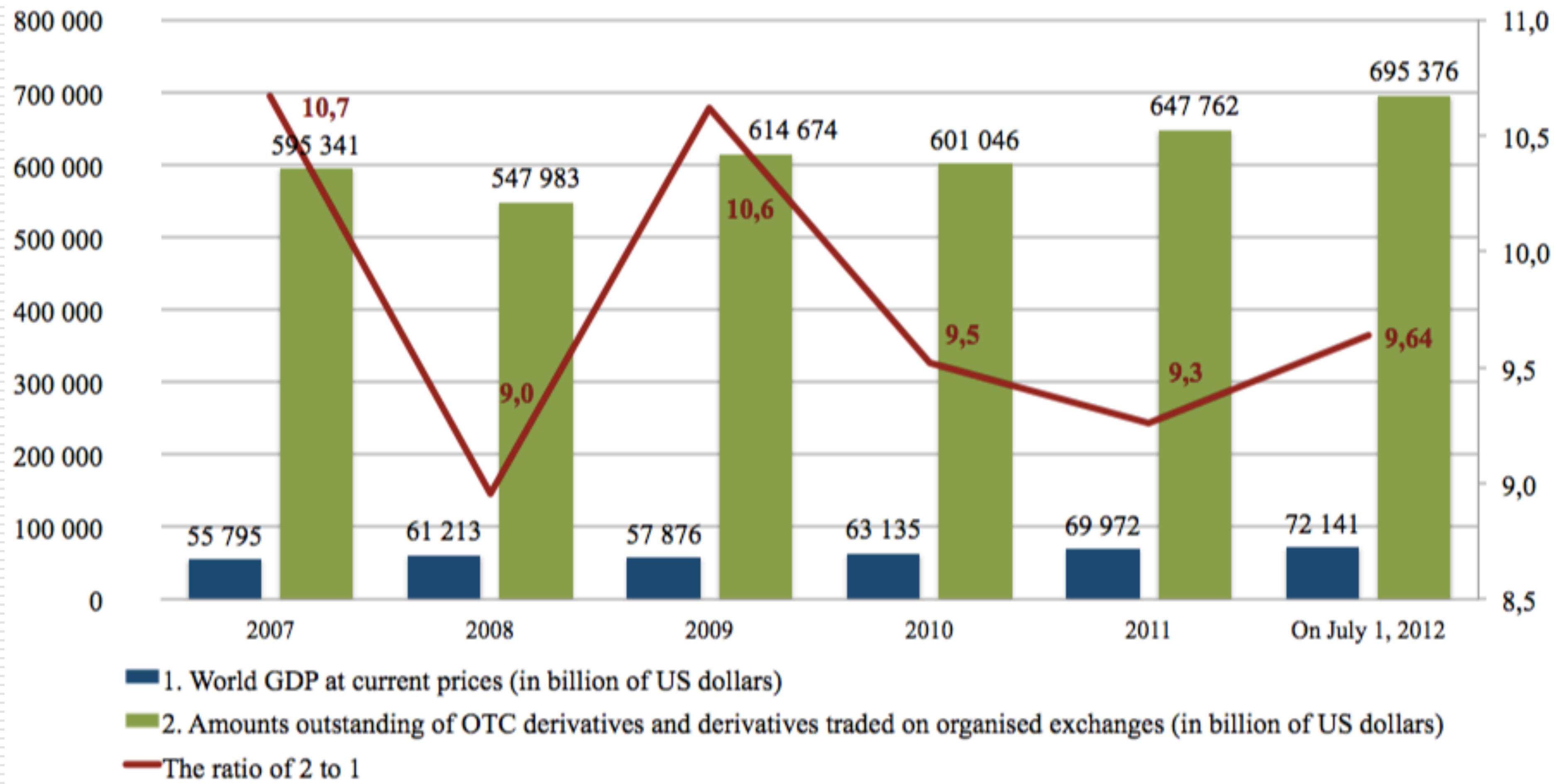
THE KEY FEATURES OF ACTUAL CRISIS PHENOMENA :

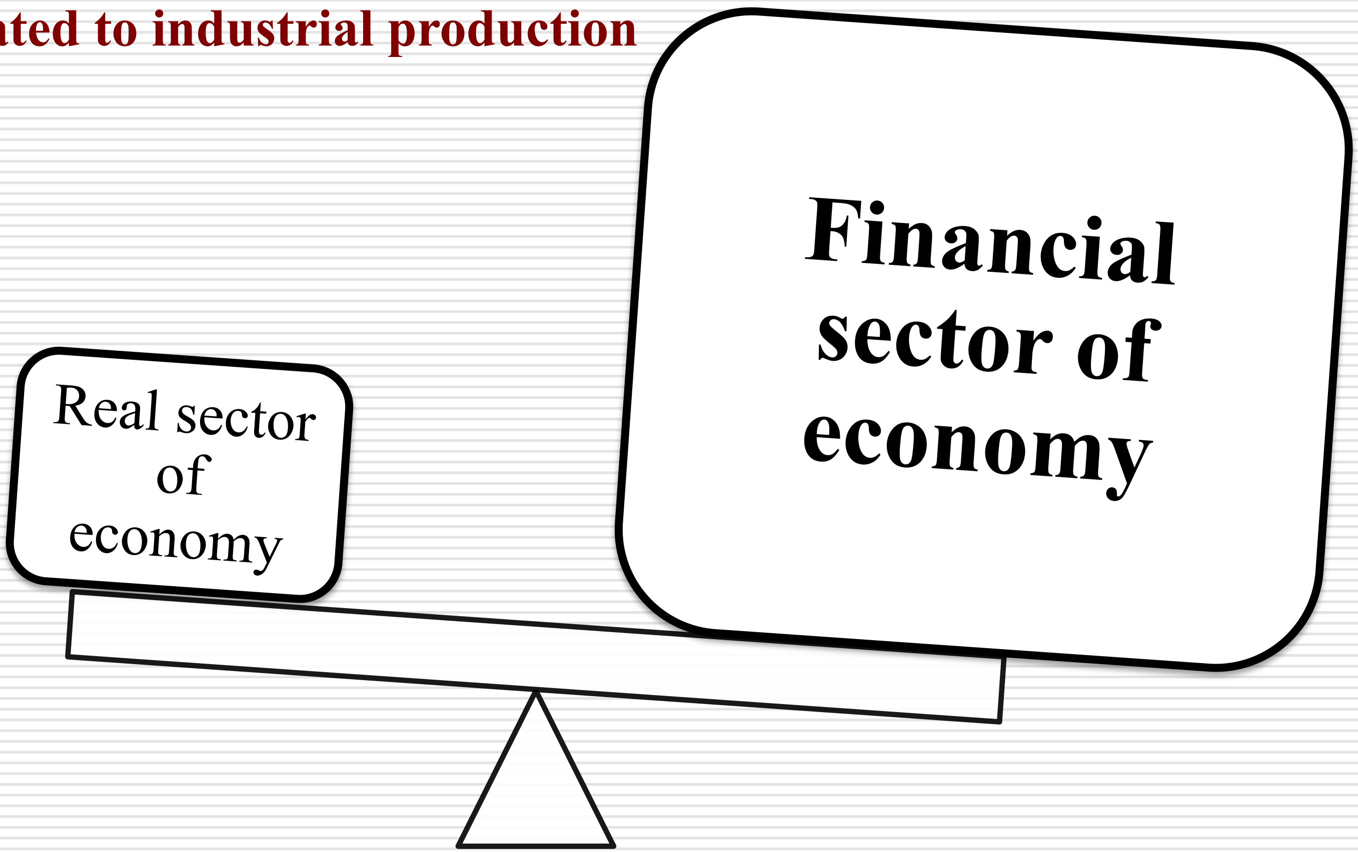
- ✓ the global scale;
- ✓ progress in conditions of increased disproportions between the financial and the real sectors of economy;
- ✓ increased speed of intersegmental and intercountry spread of the crises;
- ✓ quickness of appearance and the depth of socio-economic impacts

Amounts outstanding of OTC derivatives and derivatives traded on organised exchanges 9,64 times exceed world GDP and 3,3 times exceed world financial assets (BIS и The World Bank).



Disproportions between real and financial sectors of economy

Only 2-3% of world financial transaction closely related to industrial production



Principles of formation of the system of crisis phenomena indicators on stock market

- principle of binding real and financial sectors of economy;
- principle of significance;
- principle of adequacy and reliability;
- principle of applicability and understandability;
- principle of universality;
- principle of verification condition.

Requirements for time series of the indicators:

- length and stability;
- frequency and immediacy of publishing;
- accessibility.

Zero-coupon yield curve as an crisis phenomena indicator. Scientific researches:

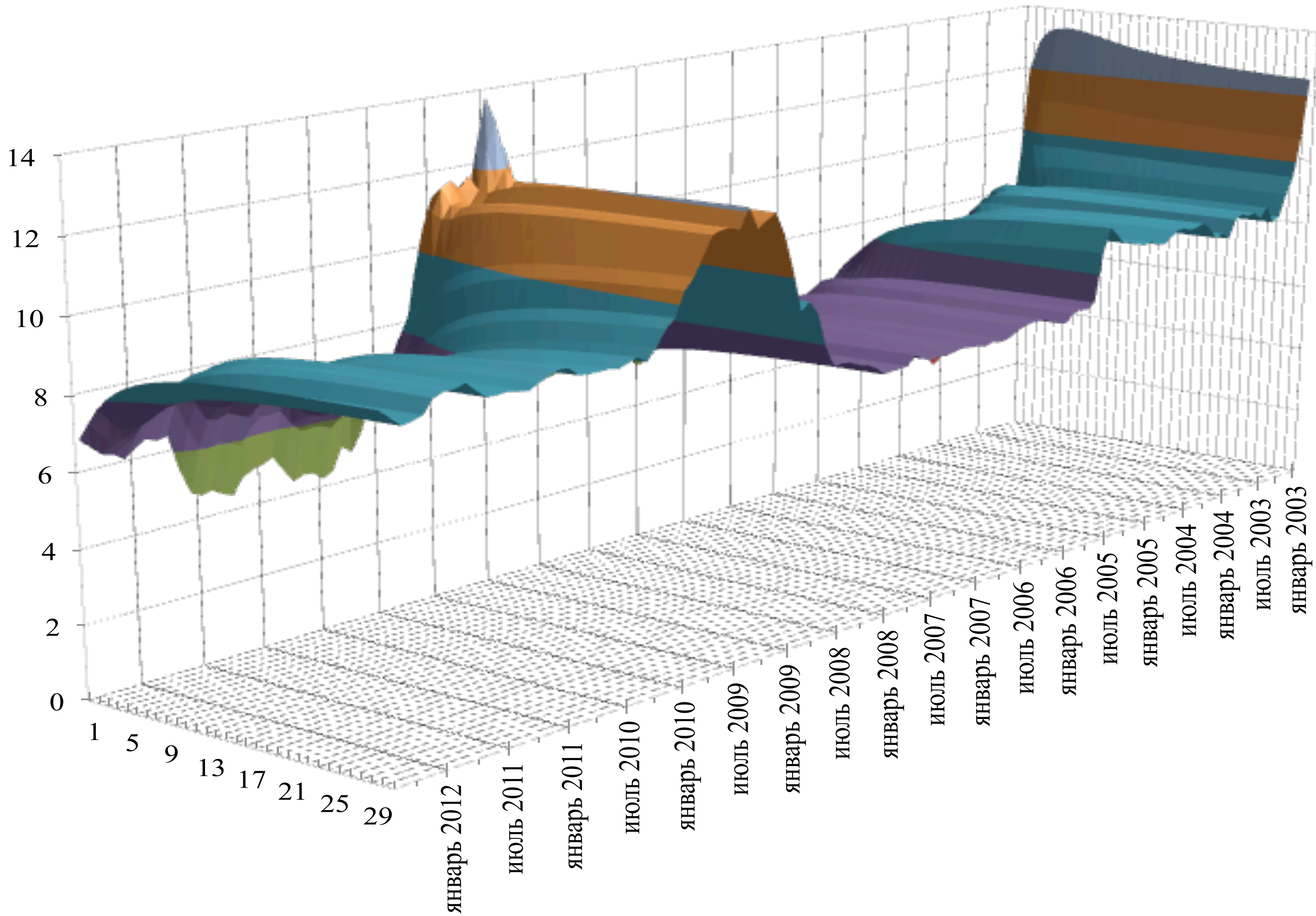
- ✓ J. Campbell, R. Shiller (1991);
- ✓ A. Estrella, Gikas A. Hardouvelis (1991);
- ✓ J. Stock, M. Watson (1992);
- ✓ A. Estrella, F. Mishkin (1996);
- ✓ A. Estrella, M. Trubin (2006);
- ✓ J. Wright (2006);
- ✓ A. Ang, M. Piazzesi, M. Wei (2006) and others.

THE GOAL OF THE RESEARCH:

building of the system of crisis phenomena indices based on Russian zero-coupon yield curve.

Hypothesis: zero-coupon yield curve is an indicator of the crisis phenomena.

ZERO-COUPON YIELD CURVE
(January, 2003 - July18, 2012)



Research methods of zero-coupon yield curve (ZCYC) as an indicator of crisis phenomena

I	PERIODIZATION	Dividing time into historical periods according to economic conditions (crisis-free, crisis, post-crisis periods).
II	ZCYC PLOTTING	Plotting of the ZCYC and determination of ZCYC's forms in the context of periods.
III	ZCYC SEGMENTATION (TEMPORAL)	Identification of short-, medium- and long-term interest rates
IV	ZCYC DESCRIPTIVE STATISTICS FOR EACH RATES AND PERIODS	- Average, maximum, minimum value calculation; - standard deviation of the yield calculation; - calculation of the ZCYC's shift; - calculation of the ZCYC's slope; - calculation of the ZCYC's curvature.
V	IDENTIFICATION OF ZCYC INDICATIVE LEVELS	Calculation of indicative indices based on ZCYC's deformations.
VI	TESTING OF ZCYC INDICATIVE LEVELS	Testing ZCYC's indicative indices for leading features.

DEFORMATIONS OF THE ZCYC

During the period of crisis:

I. Shift of the ZCYC up along the X-axis

II. The slope takes negative values

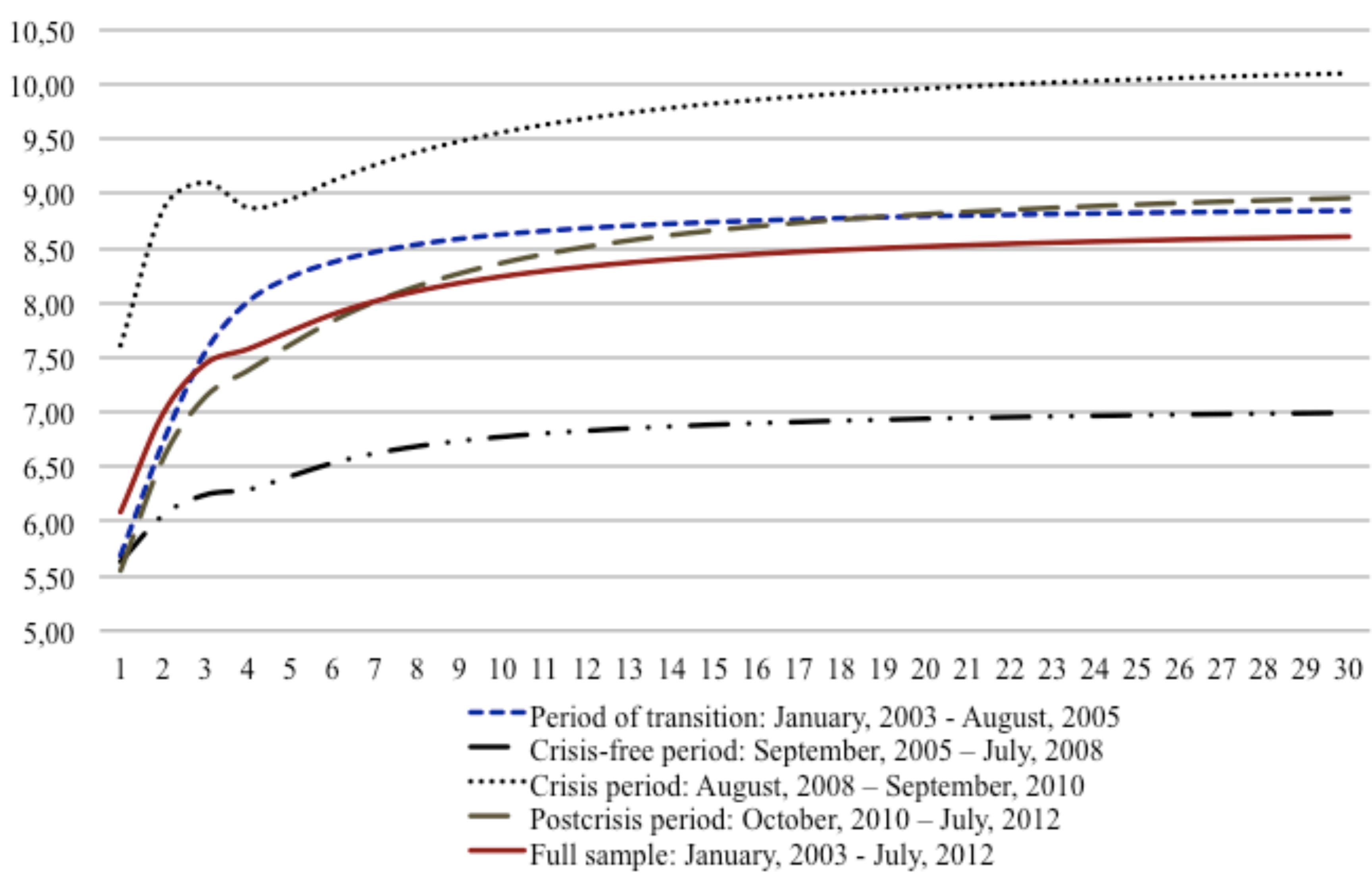
III. Curvature increases

IV.

the largest standard deviation is observed

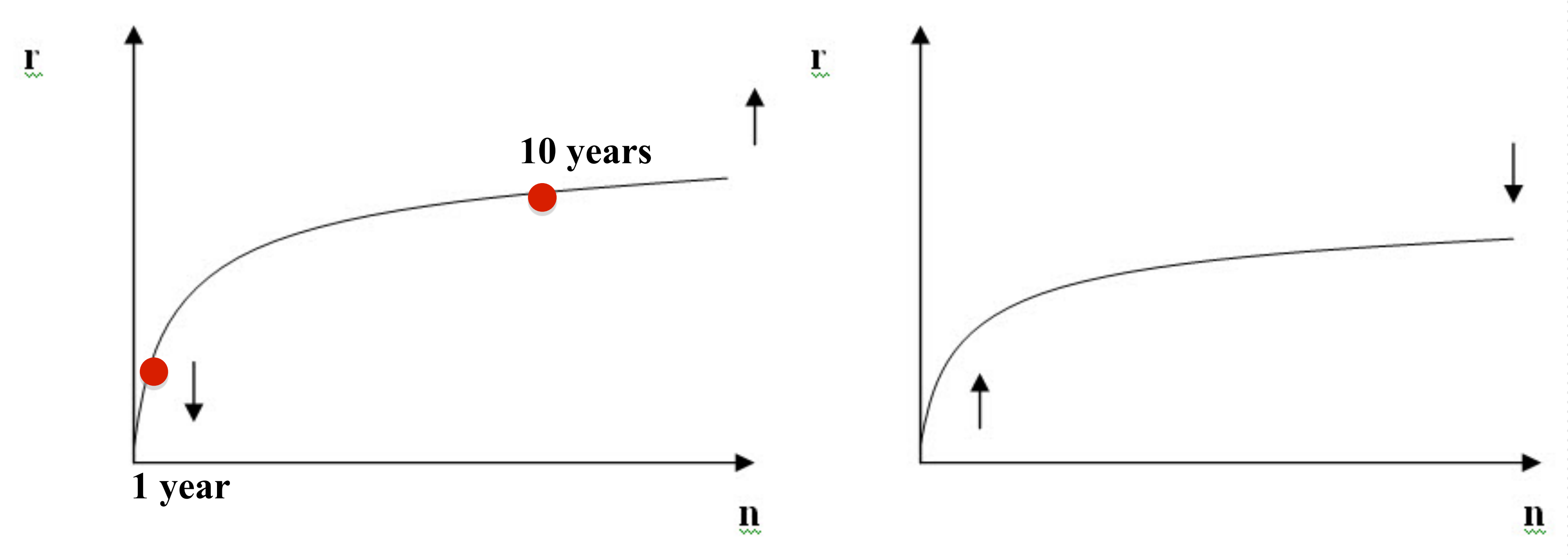
V. the ZCYC takes the downward form

I. THE SHIFT OF ZERO-COUPON YIELD CURVE IN THE DIFFERENT PERIODS



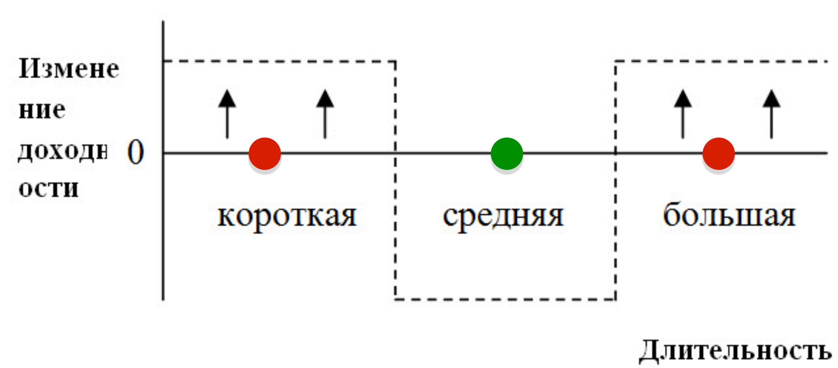
ZERO-COUPON YIELD CURVE SLOPE

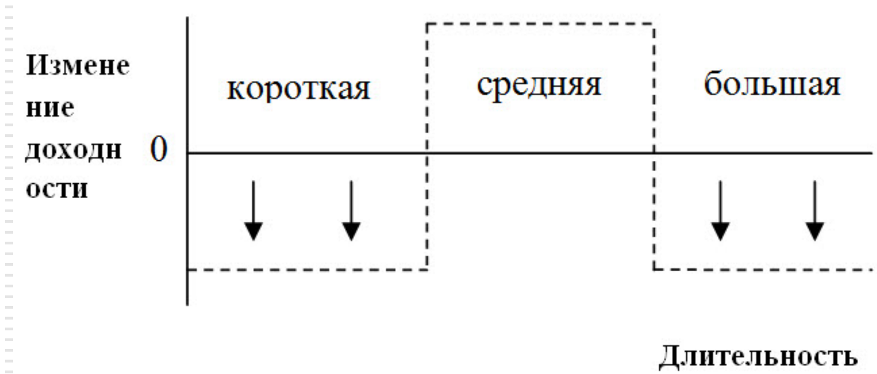
- the difference between 1-year and 10-year yields as representative short- and long-term interest rates.



ZERO-COUPON YIELD CURVE CURVATURE

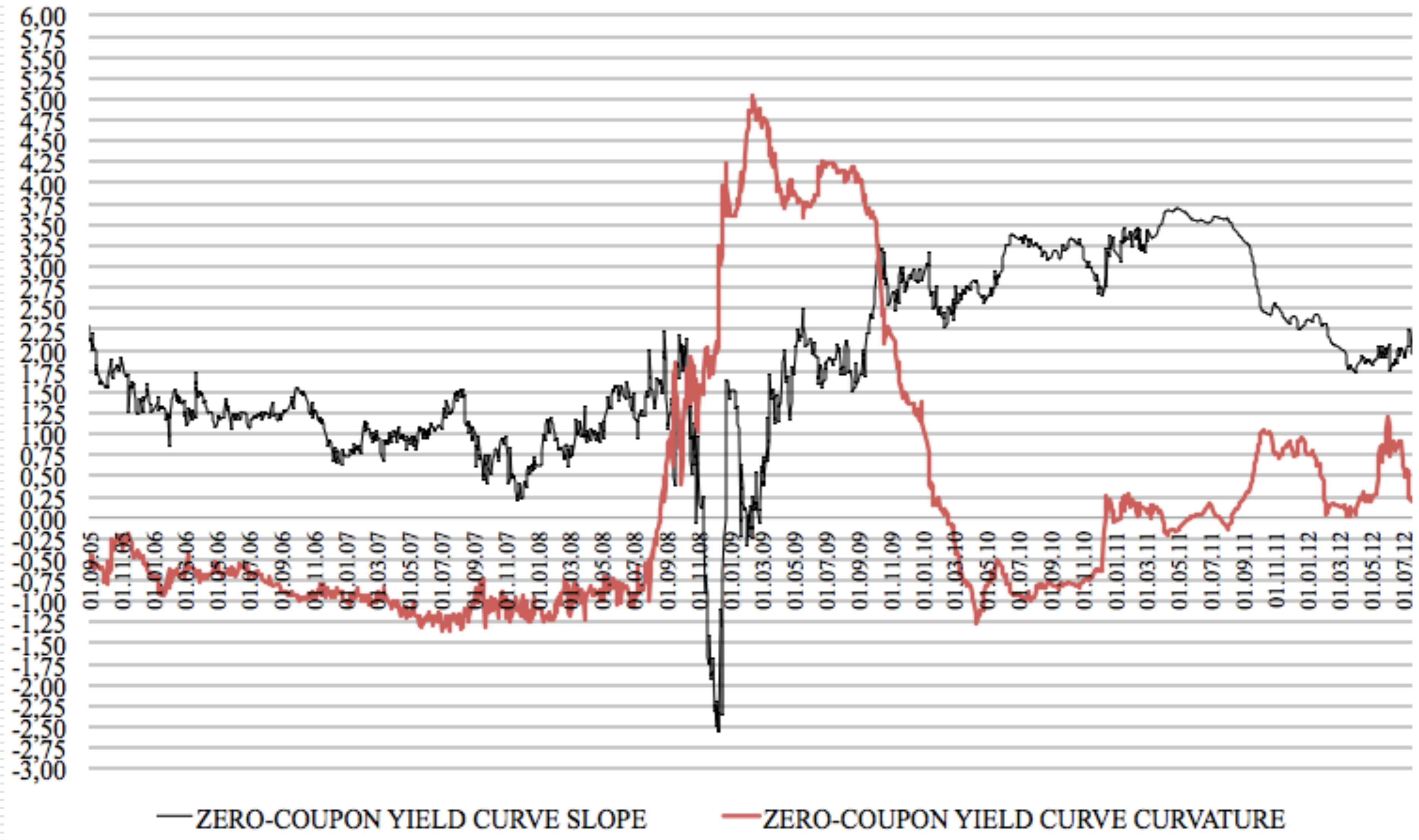
- the difference between the 4-year rate and the average of the 1- and 10-year rates.



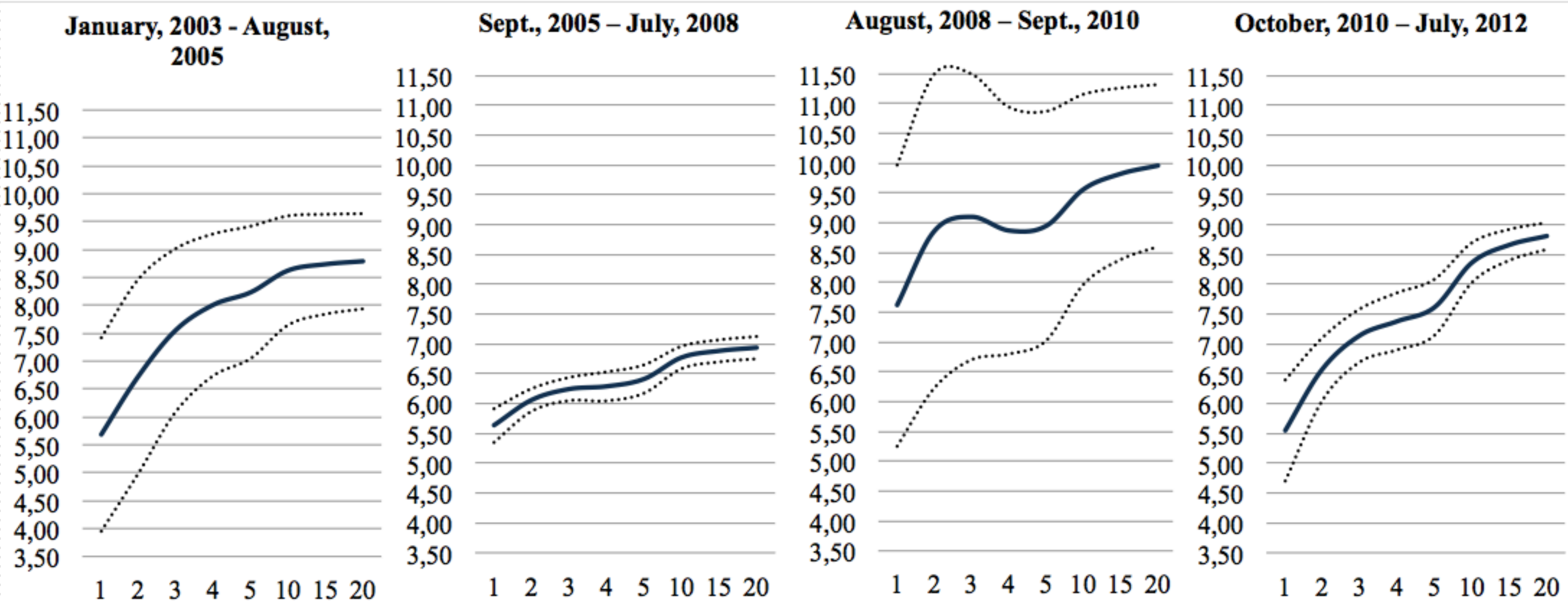


1 year **4 years** **10 years**

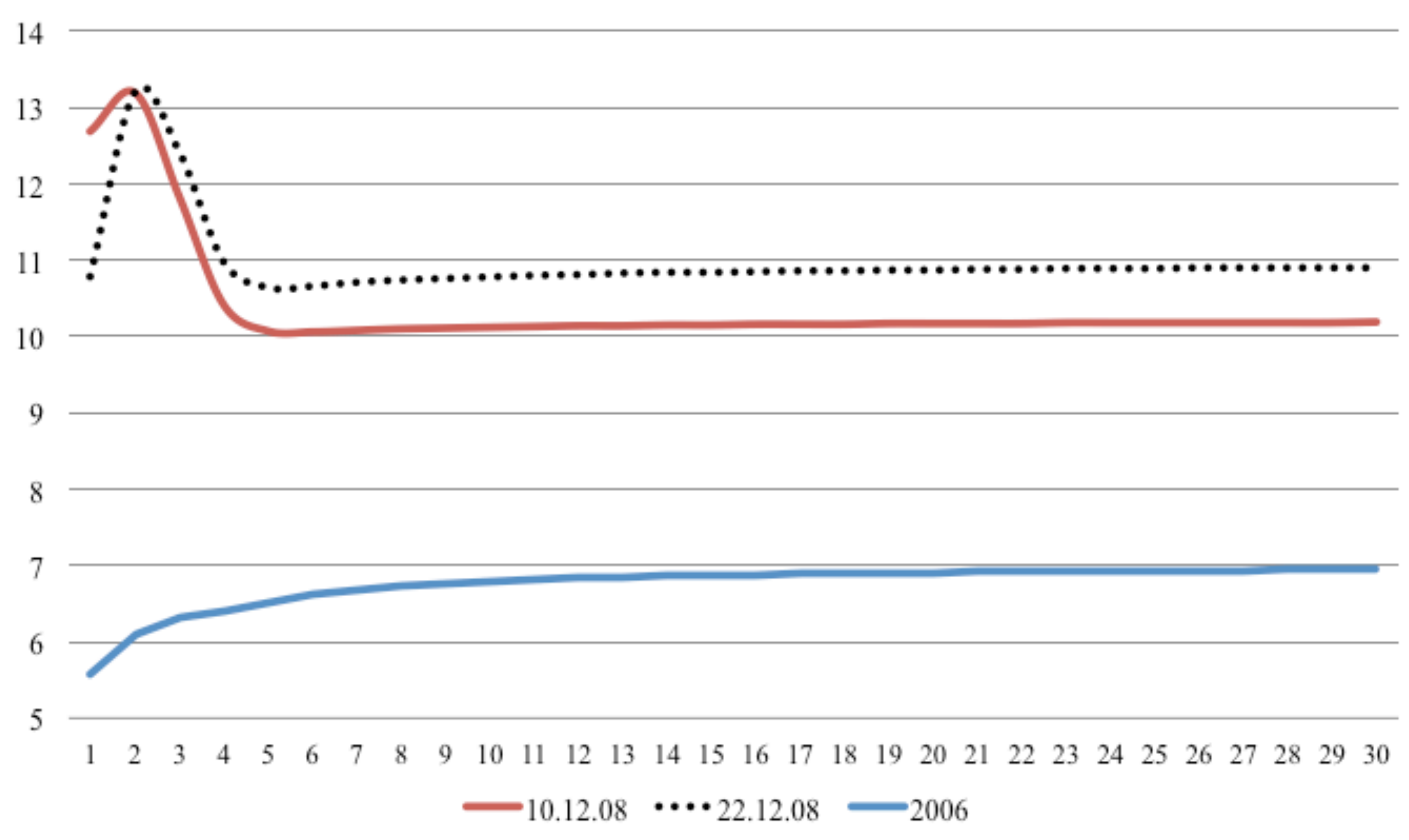
II, III. ZERO-COUPON YIELD CURVE SLOPE AND CURVATURE (September, 2005 – July, 2012)



IV. THE STANDARD DEVIATION OF THE SCYC



V. ZCYC FORMS



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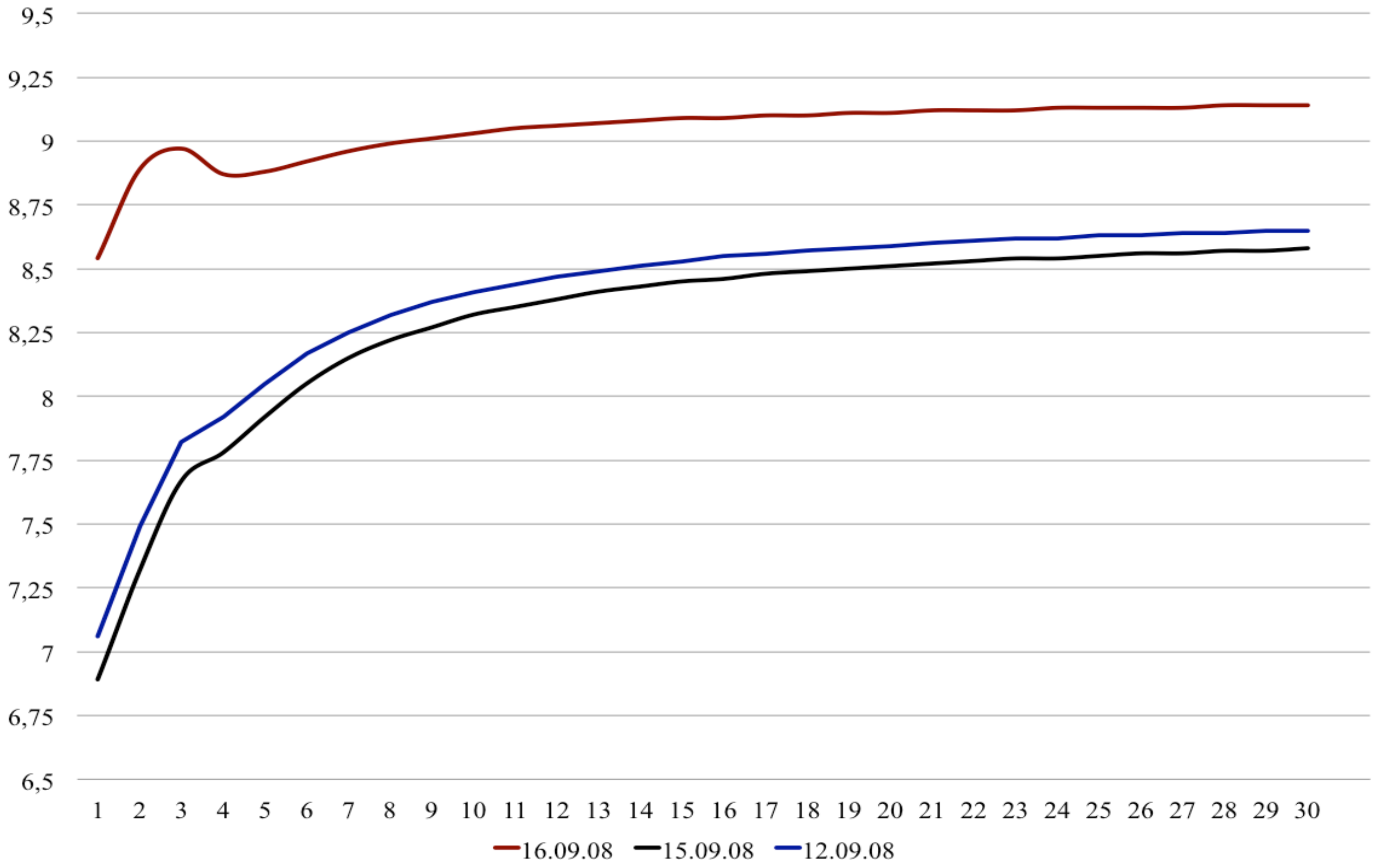
THE SYSTEM OF CRISIS PHENOMENA INDICES BASED ON RUSSIAN ZCYC

	Index	Time span	Indicative level
1	ZCYC standard deviation		
	1 year	weekly	>0,2%
	4 years	weekly	>0,11%
	10 years	weekly	>0,08%
2	ZCYC curvature	daily	>0,5%
3	ZCYC slope	daily	<0%
4	Change of yield rates	daily	Increase
5	ZCYC forms	daily	Inversion

ZCYC FORMS (September, 12, 15 and 16 , 2008)



ESSENTIAL DETAIL:

short time span for analysis of crisis phenomena and lack of similar events in the past in terms of Russian economy <u>lead to further testing indicative levels based on Russian zero-coupon yield curve</u>

APPROBATION OF RESEARCH RESULTS

Research findings are implemented in analysis of stock market conditions and its segments, analysis of risks of crises phenomena appearance by investment company **«Unison Capital»** and trust company **«Unison Trust»** (Tyumen)

THANK YOU FOR ATTENTION!

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