NATIONAL RESEARCH UNIVERSITY

INDICES OF REGIONAL ECONOMIC ACTIVITY FOR RUSSIA

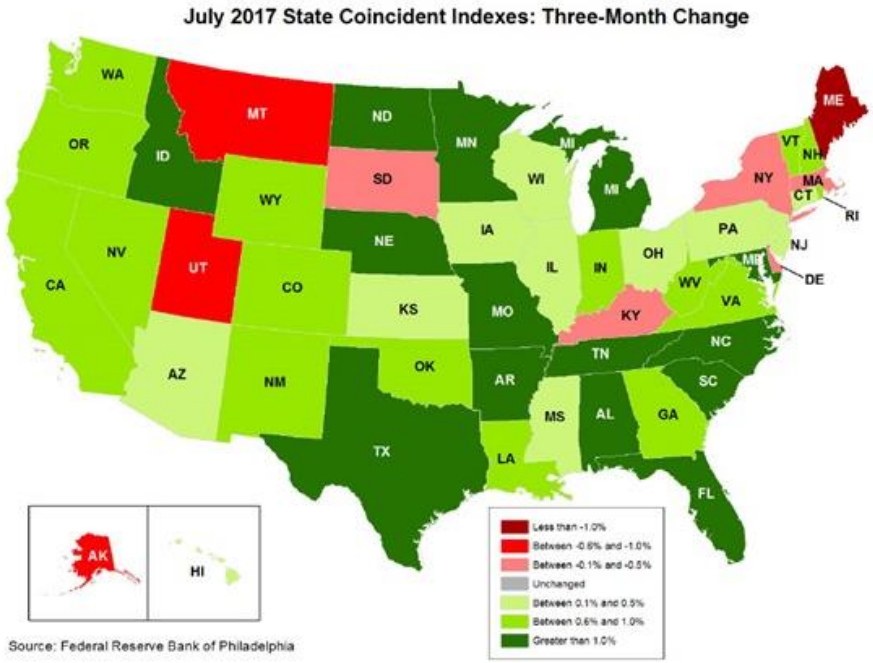
Sergey V. Smirnov & Nikolay V. Kondrashov

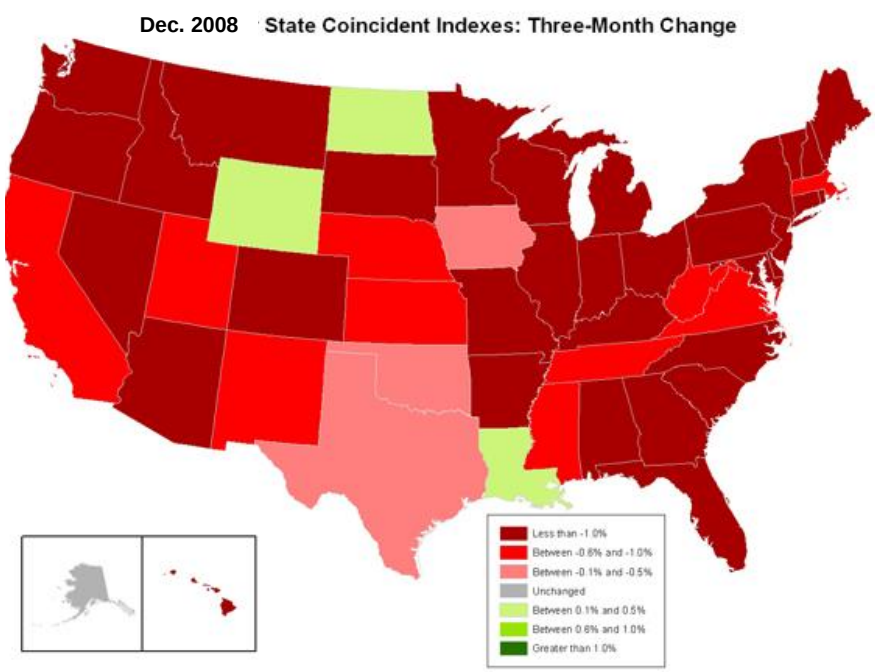
WIIW Seminar, Vienna (Austria), October 9, 2017

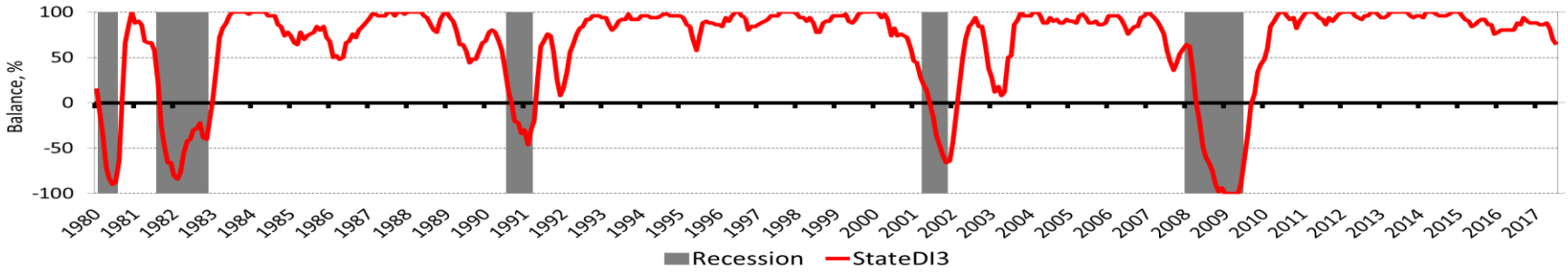
Content

- Motivation
- Russian regional statistics
- Proposed methodology
- Does it work?
- Possible applications
- Conclusion

Motivation: State Coincident Indexes by Philly Fed







Russian regional statistics: what is available?

- Annual: Gross regional product (with 1.5-year lag)
- Quarterly:
  - Agricultural production
  - Transportation, etc.
- Monthly:
  - Industrial production
  - Construction
  - Retail trade
  - Wholesale trade
  - Paid services for households, etc.

Russian regional statistics: easy to update

Statistical indicators used in calculating REA indices

Indicators (in comparable prices, in % to the corresponding period of the previous year)	Sources *	
	01/2005 – 12/2008	01/2009 – present
Industrial Production Index (IPI)	(1)	(2)
Construction, volume of work done	(3)	(2)
Retail trade turnover	(1)	(2)
Wholesale trade turnover (entities with classification code 51)	(1)	(4),(1)
Volume of paid services for households	(1)	(2)
**** Sources***		
(1) – Monthly bulletin "Socio-economic Conditions in Russia", Appendix "Particular statistical indicators of socio-economic conditions in regions of the Russian Federation"		
(2) – "Information for monitoring socio-economic conditions in regions of the Russian Federation		
(3) – unpublished Rosstat data, provided at our request		
(4) – EMISS (Unified Interagency Statistical Information System), section 1.22.1		

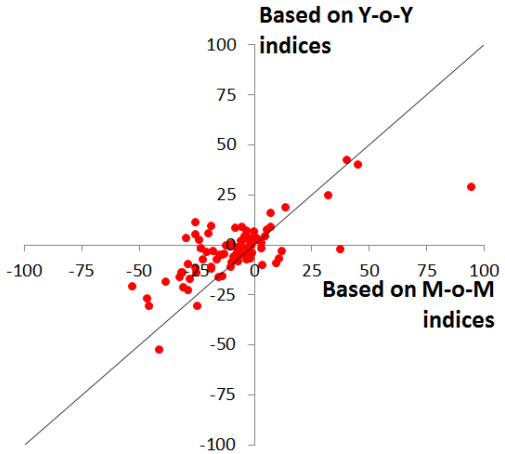
Methodology, initial idea: to calculate weighted averages of seasonally adjusted base indices

- For each region, using month-on-month (M-o-M) growth rates to calculate the chain indices for all five sectors;
- For all these indices, to make seasonal adjustments using ARIMA X-12 or Tramo/Seats (the are implemented as part of the 'Demetra' package);
- For each region, to calculate a REA index as a weighted average of five seasonally adjusted chain indices (e.g., using each sector's share of GRP as weights);
- Finally, to calculate composite REA indices for Russia as a whole, for federal districts, etc.

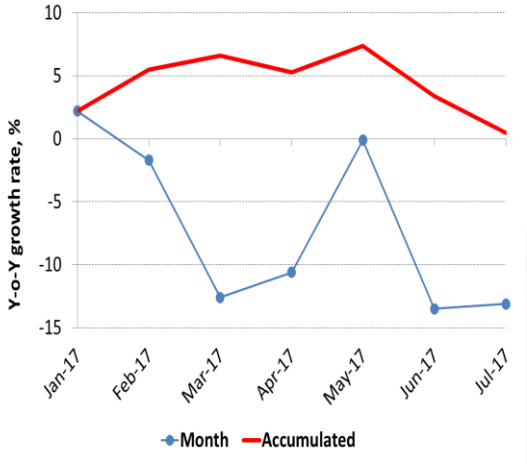
This turned out to be completely impossible!

Russian regional statistics: what is wrong with the monthly data?

- Multiplication of 12 monthly M-o-M indices is not equal to the corresponding Y-o-Y index
- Y-o-Y monthly indices do not match with Y-o-Y indices for the period from the year beginning



All regions: Industry, Dec. 2015/ Dec. 2014



Moscow: Construction, Jan.-July 2017

Therefore, these statistics appear useless

Russian regional statistics: to use or not to use?

???

Methodology, new idea: to calculate simple averages of special dummies

- Key dummy:

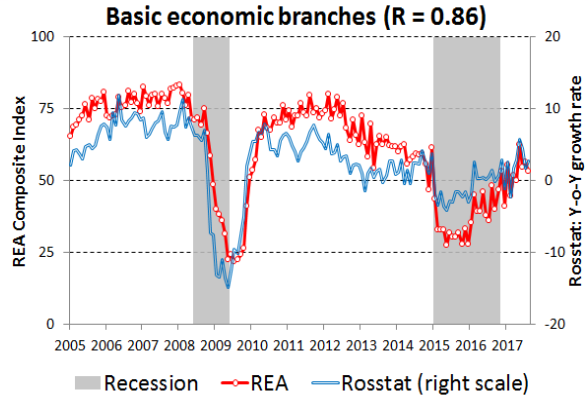
$D_{sr}^{t} = 100$ if YoY growth rate > 0 at moment t in sector s in region r

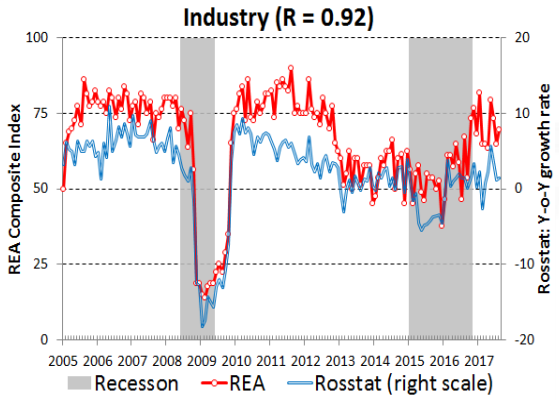
$D_{sr}^{t} = 0$ otherwise

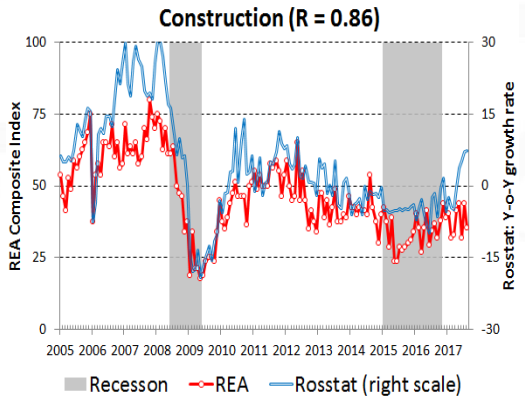
- Average for sector *s:* $S_s^t = 1/n \sum_{r=1}^{n} D_{sr}^t$
- Average for region *r:* $R_r^t = 1/5 \sum_{s=1}^{5} D_{sr}^t$
- Average for FD*:* $R_{FD}^t = 1/m \sum_{r \epsilon FD}^{m} R_r^t$
- Average for RF*:* $R^t = 1/n \sum_{r=1}^{n} R_r^t = 1/5 \sum_{s=1}^{5} S_s^t$

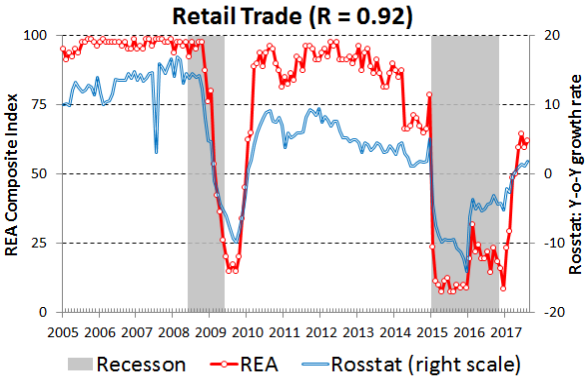
Does this methodology work?

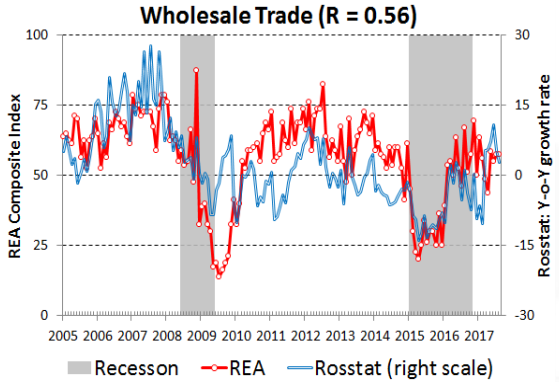
Methodology: functional tests

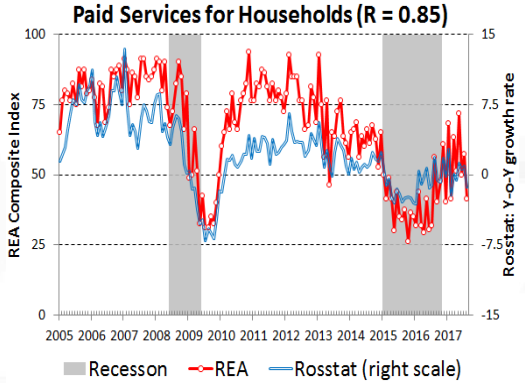












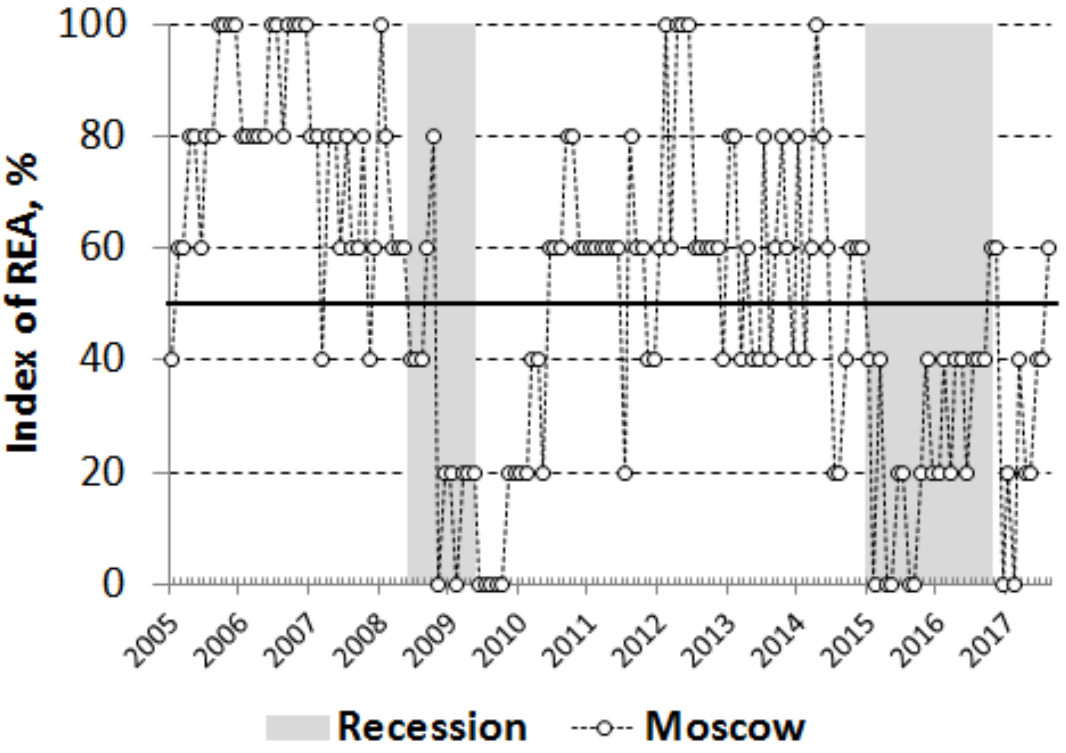
It works!

Two possible applications

- To assess the level and changes in economic activity of particular regions;
- To use a set of regional indices to outline the broader economic conditions across sectors, federal districts, and the whole Russian economy.

Let's have a look…

Particular region: case of Moscow



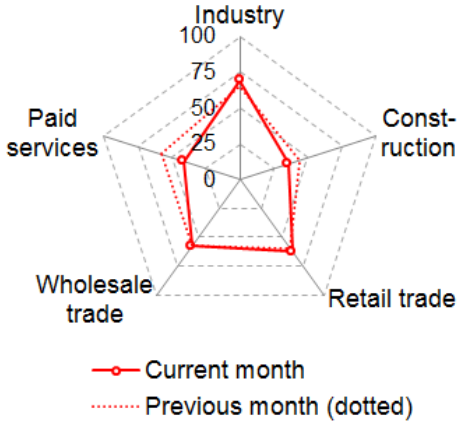
82 similar charts may be plotted

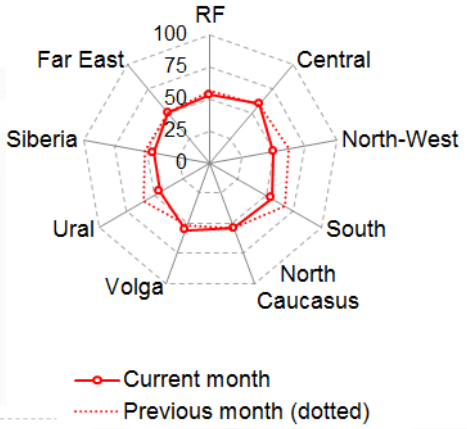
Using this approach it's possible:

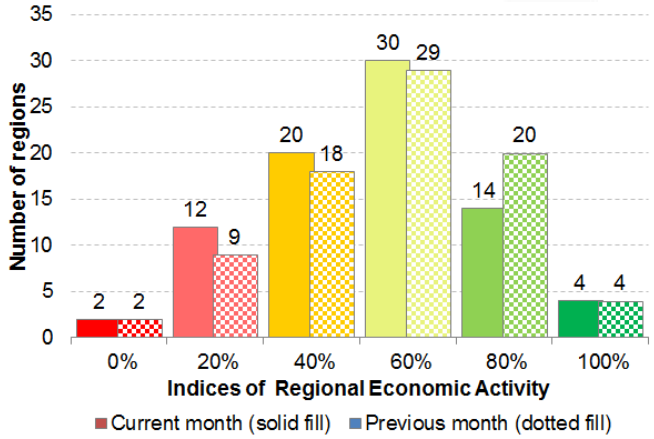
- To rank regions, to identify the most successful or most depressed;
- To group regions with similar economic trends;
- To trace the process of contagion with cyclical falls and rises across Russia.

This is the challenge for the future…

Monitoring the business cycle with indices of REA: recent changes

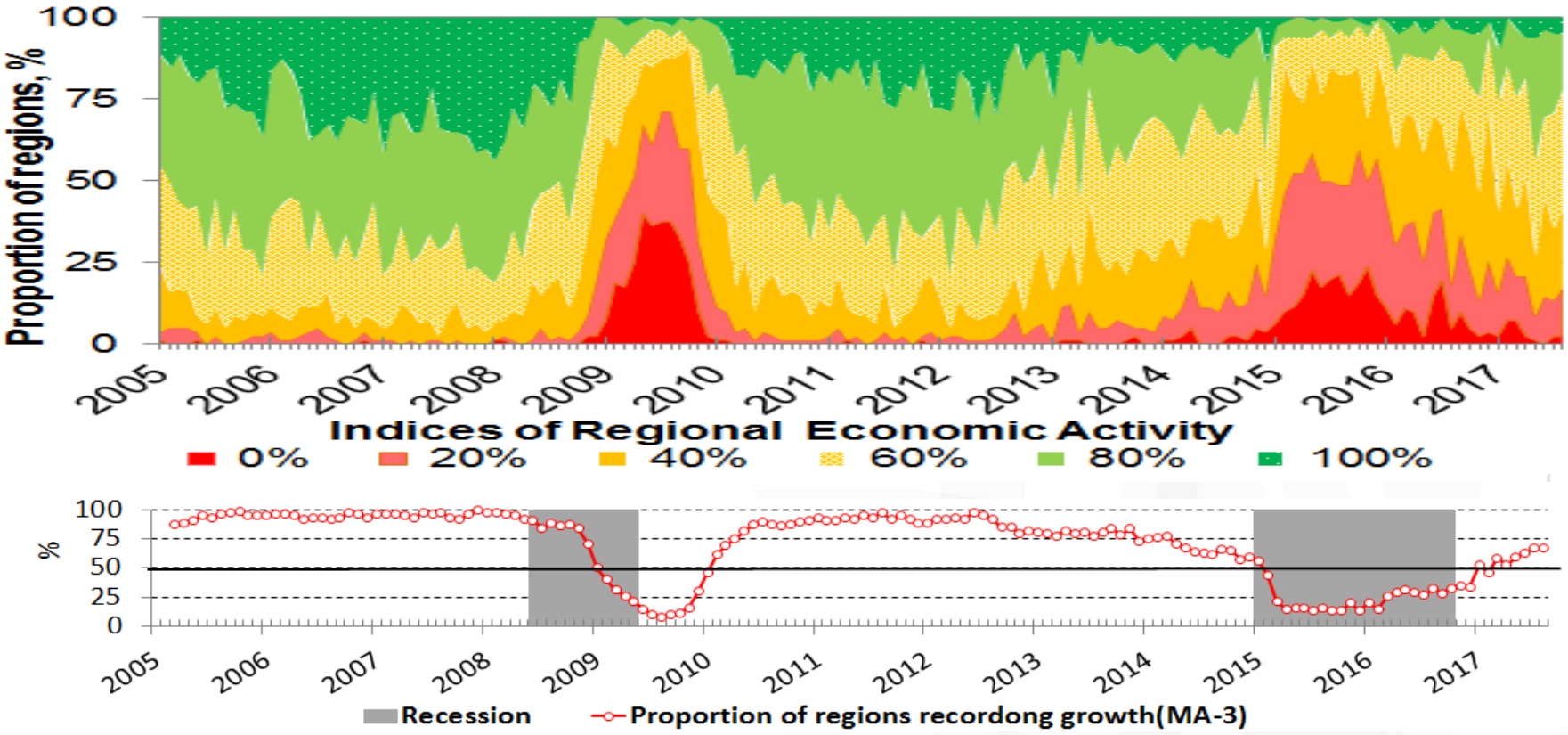






What is the norm for a growing economy?

Monitoring the business cycle with indices of REA: recent cyclical phase



Currently, slow expansion is evident

Conclusion: the proposed indices of REA…

- Are very simple to calculate;
- Give reasonable results (unlike the raw data);
- In real time, make it possible:
  - to analyze economic trajectories of particular regions;
  - to identify successful and depressed regions and rank them;
  - to confirm cyclical turning points;
  - to clarify current state of the Russian economy;
  - to trace the regional dimension of the Russian economic cycle.

One question for the audience…

The question:

Could this simplified methodology be applied
to other countries and areas?

Thank you for your attention