

# Measuring and Forecasting Financial Stability

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## Speech

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**„System for Monitoring Financial Stability in Kazakhstan“**

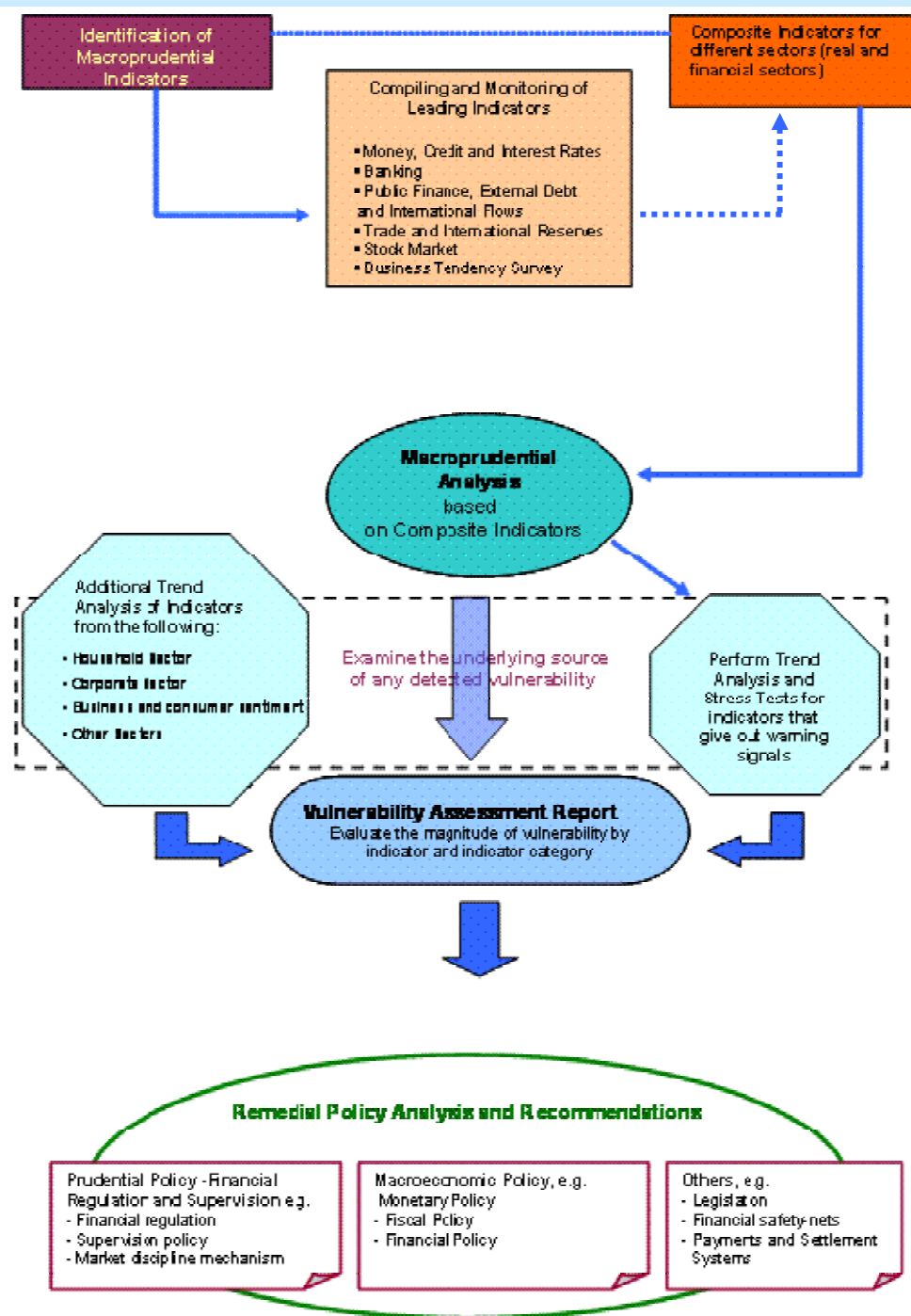
# System for Monitoring Financial Stability in Kazakhstan

Gernot Nerb

Dresden

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# A Macroprudential Analysis and Remedial Policy Formulation Quantitative System for High Frequency Monitoring of Vulnerability



# List of Content

1. Real Economy: Composite Coincident Indicator (*CCI*)
2. Real Economy: Composite Leading Indicator (*CLI*)
3. Composite Banking Indicator (*CBI*)
4. Composite Financial Market Indicator (*CFI*)
5. External Economic Climate for Kazakhstan

# Methodology

- Indicators were calculated following the NBER method
- Quarterly data was extended to obtain monthly data

# NBER Method

1. Calculate month-to-month symmetric rate of change for each component (differences in case of %-changes and business survey results as input variables)
2. Take each series' standard deviation
3. Calculate its inverse
4. Sum up all inverses
5. Divide the inverses through their total sum: This will be the series' weight
6. Multiply each component with its weight
7. Use this recursive formula to build the index:  
( $I$  = Index Value;  $s$  = weighted components)

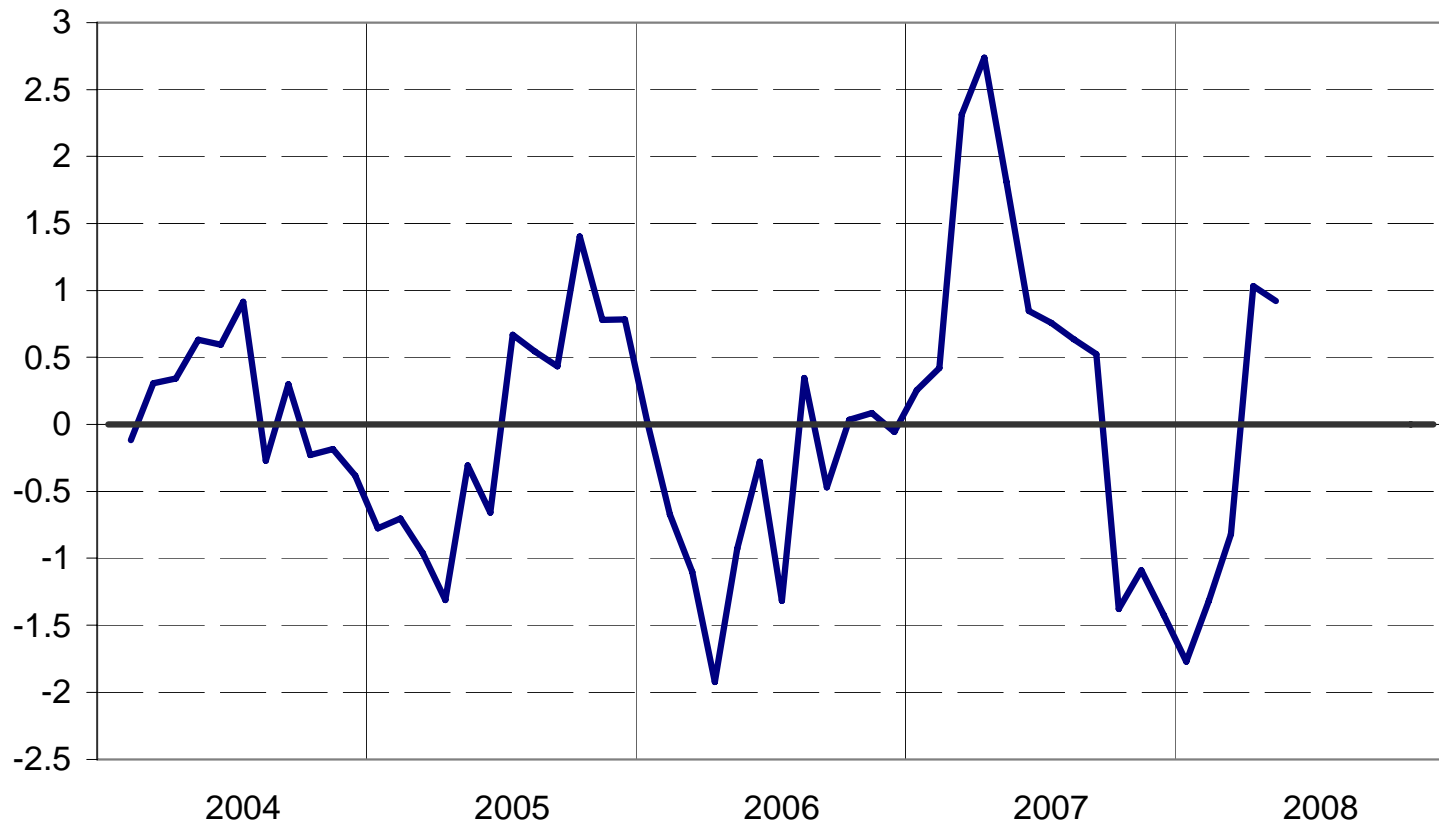
$$I_t = I_{t-1} * \frac{200 + s_t}{200 - s_t}$$

# 1. Composite Coincident Indicator for Real Economy

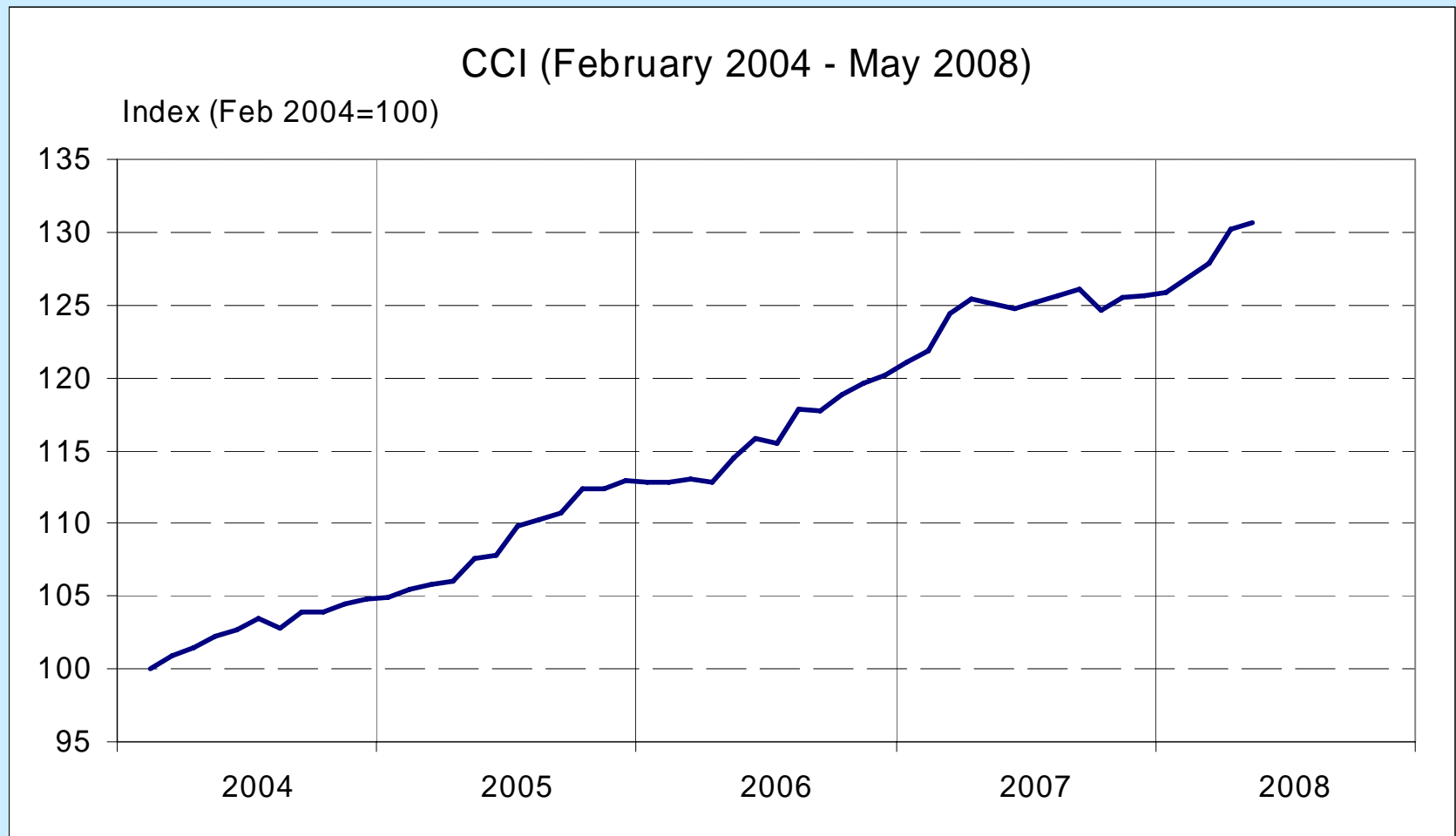
- February 2004 – May 2008
- Based on 4 time series (Economically Active Population, Physical Index of Industrial Production, Trade Volume, Wages)
- Wages and Trade Volume have been converted to real values
- All series were seasonally adjusted (Census X12-Arima method)

# 1a) Composite Coincident Indicator for Real Economy

HP-Filtered Composite Coincident Indicator (CCI, trendadjusted)



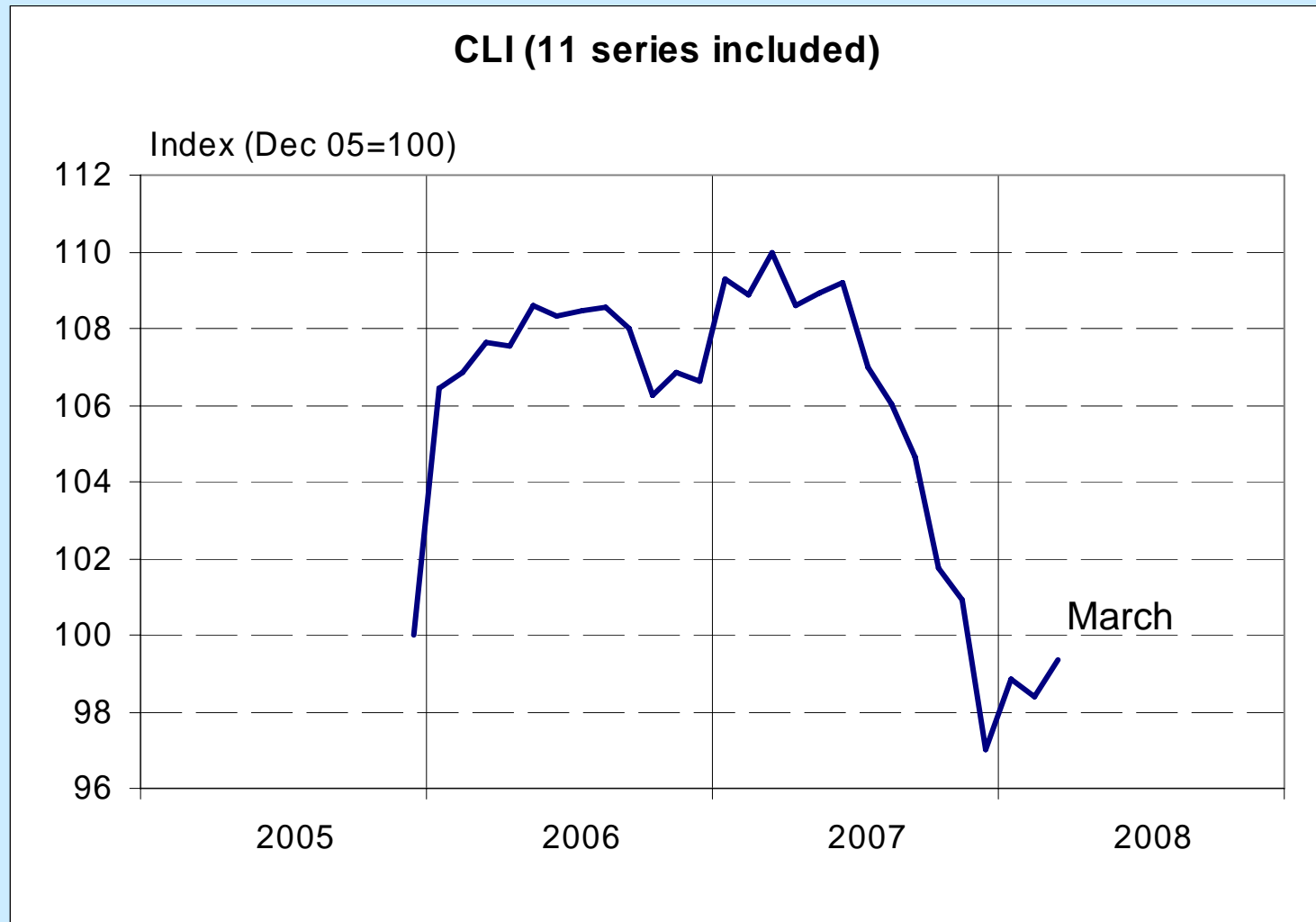
# 1b) Composite Coincident Indicator for Real Economy



## 2. Composite Leading Indicator for Real Economy

- Selected variables for CLI: Oil price (Rate of Change), US leading index, Ifo world economic survey, M2 (growth), Real Stock Price (growth), Manufacturing of industrial products (Expectations), Stock of finished goods (Expectations), Economic Situation of transport sector Volume of cargo transportation of all modules Building permissions
- Three CLI have been calculated, each one with different starting dates:
  - Jan 2004 (with 8 variables)
  - Jan 2005 (with 10 variables)
  - Jan 2006 (with 11 variables)

# 2e) CLI – Starting Jan 2006



# 3. Composite Banking Indicator

- January 2002 – March 2008
- Based on 10 assorted series (two were dropped, because the series were too short, less than two years)

# 3a) Composite Banking Indicator

The stress indicators of the **Kazakhstan's *Banking sector*** are:

- (Interbank loan rate spread (3-month minus one week) (m) )
- Foreign assets/Long term foreign liabilities of banks (m)
- Growth rate in total loans (m)
- Ratio of bank loans to trade, construction and industry to total loans (q)
- Interest rate companies are paying to banks less inflation rate (m)
- (Housing price inflation (m))
- Growth in foreign borrowing by banks (q)
- Growth in inflow of portfolio investment (q)
- Interest rate companies pay to banks less Kazakh Treasury bill rate as a measure of profitability of banks (q)
- Total bank loans to GDP (q)
- M2/total loans as measure of liquidity risk q)  
and
- Growth in capital inflow to construction sector (q)



## 4. Composite Financial Market Indicator

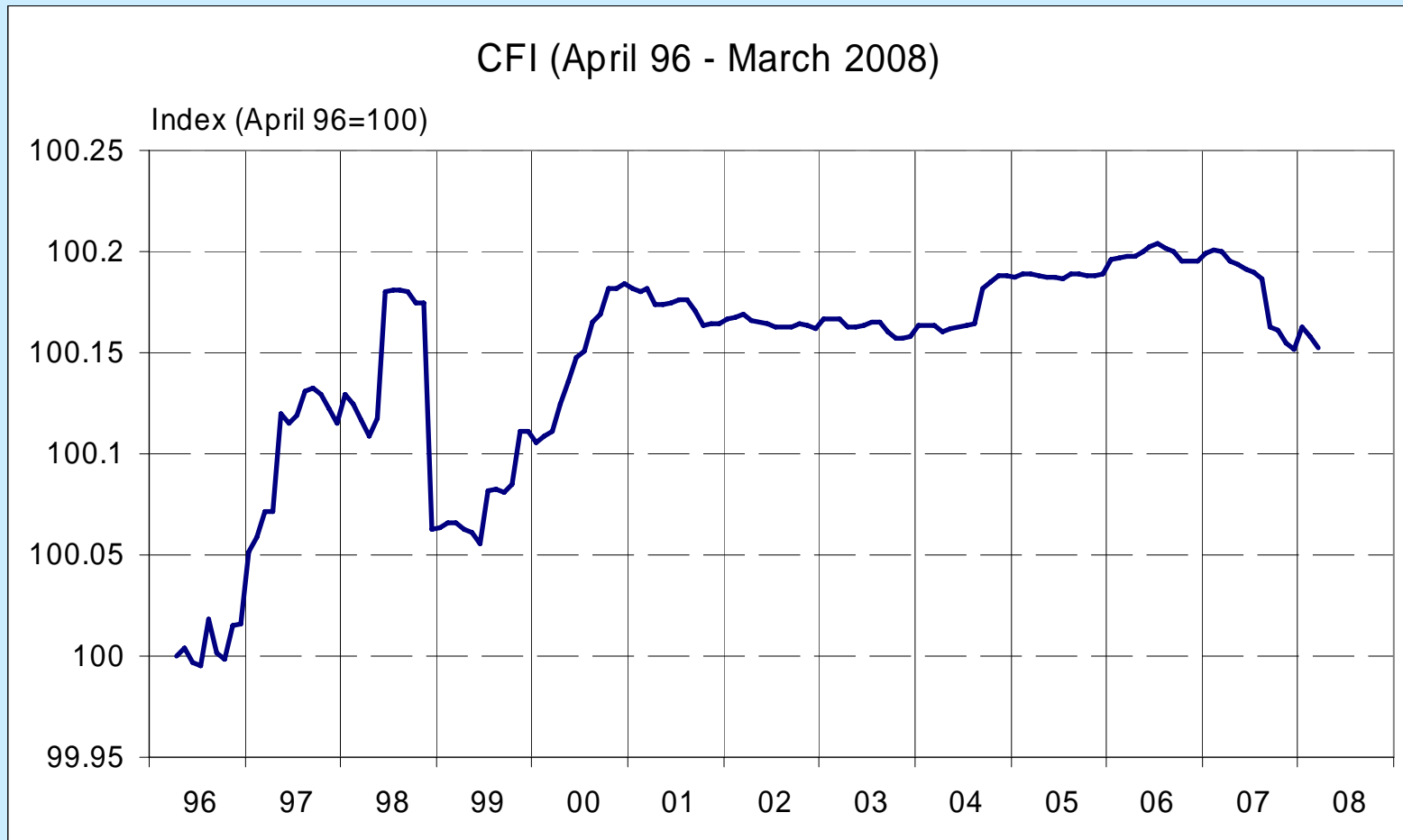
- April 1996 – March 2008
- Based on 5 assorted series (one was dropped, because the series were too short, less than two years)

# 4a) Composite Financial Market Indicator

Selected indicators:

- M2/foreign international reserves (m)
- Growth rate in real exchange rate (m)
- Treasury bill rate minus inflation rate in Kazakhstan (m)
- Difference between U.S. Treasury bill rate minus Kazakh Treasury bill rate (m)
- Current account balance over GDP (q)  
and
- (Budget deficit over GDP (q))

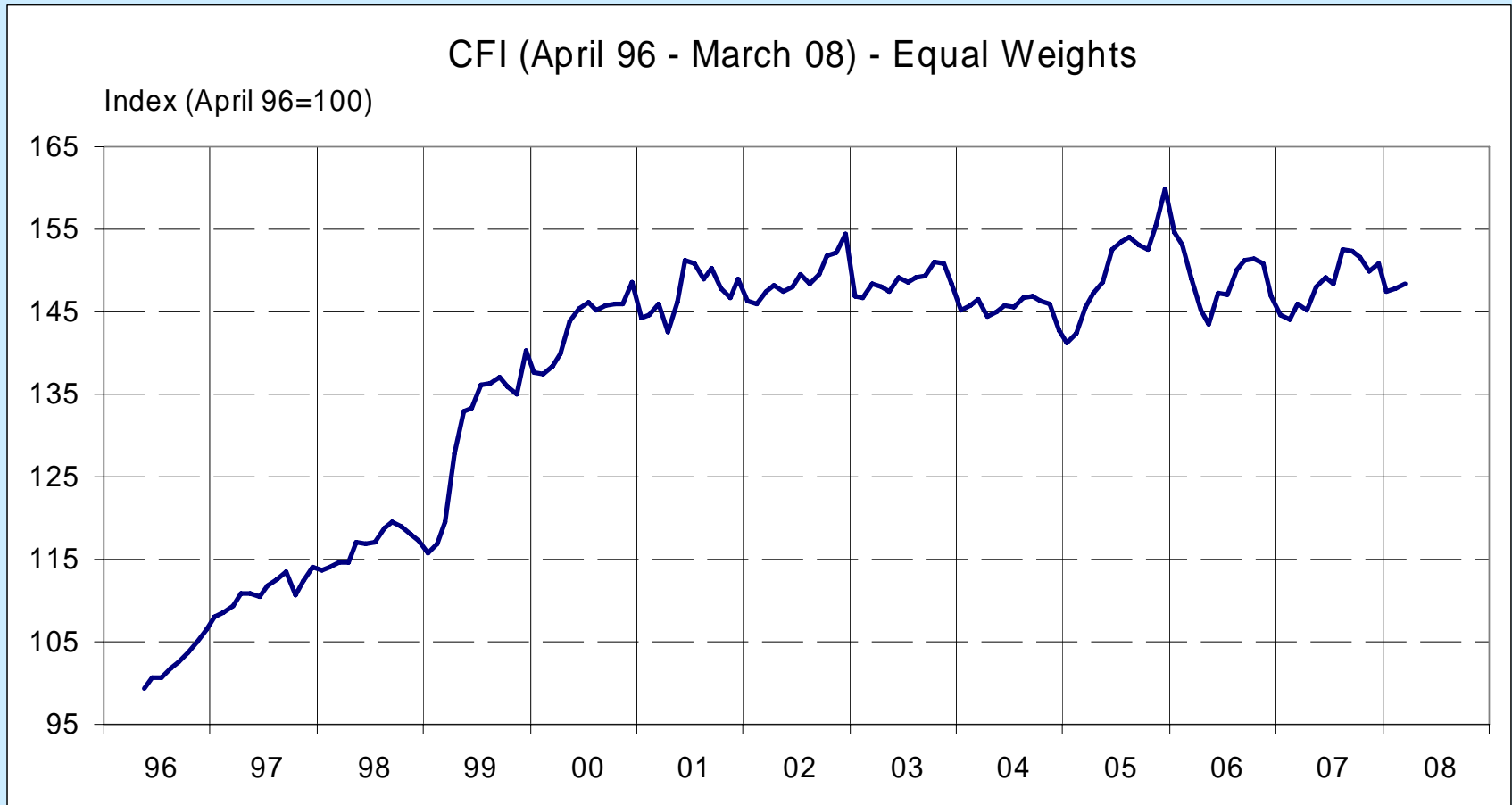
# 4b) Composite Financial Market Indicator



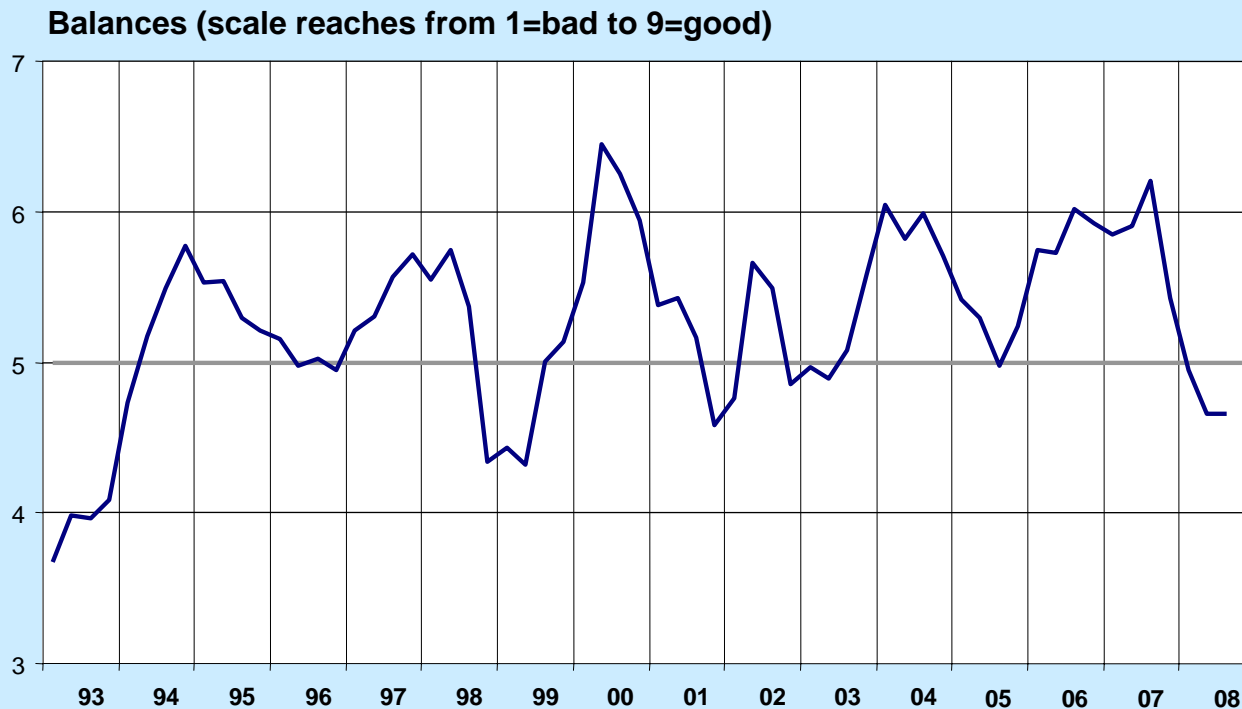
## 4c) Composite Financial Market Indicator – *Equal Weights*

- April 1996 – March 2008
- Based on 5 assorted series (one was dropped, because the series were too short, less than two years) with *equal weights*

# 4d) Composite Financial Market Indicator - *Equal Weights*



## 5. External Economic Climate<sup>\*)</sup> for Kazakhstan<sup>\*\*)</sup>

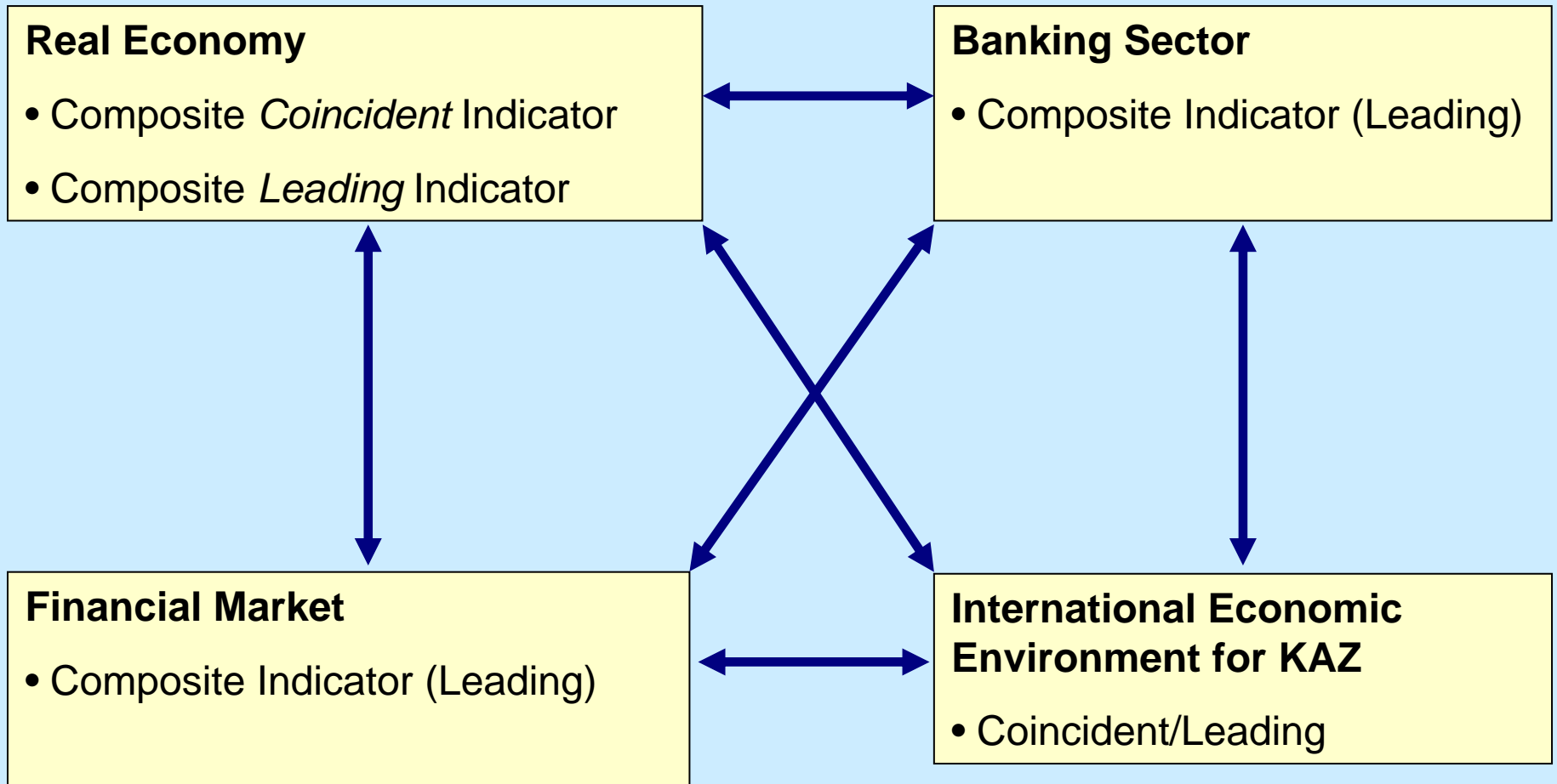


**\*) Arithmetic mean of judgement of present and expected economic situation.**

**\*\*)** Economic climate is a weighted average of respective data for Italy (16), Switzerland (16), China P.R.(12), Russia (10), France (8), Netherlands (5), Iran (5), UK (3), Ukraine (2), Israel (2), Spain (2), Romania (2), Rest of world (17).  
In the period 1993 to 1st quarter 1999 Iran, Ukraine, Israel and Romania are not included.

# First Conclusions for Kazakhstan

- Banking Crisis has its origins already in 2006 and is not yet over
- Financial System is still sound despite problems in the Banking Sector
- Real Economy showed signs of recovery at the beginning of 2008. Latest figures point to a softening of the recovery
- International Economic Environment for Kazakhstan is getting more difficult



# Further Work for Kazakhstan

VAR Analysis to study the strength of Feedback Effects from different sources of National and International Economy to the Kazakh Banking Sector

Reason: Causality directions between sets of indicators – Real Economy, Financial Sector, International Economic Environment and the Banking Sector – can never be predetermined

Thank you