

Financial Cycles in the Eurasian Economic Union

Yulia Vymyatnina

European University at St.Petersburg

Mariia Artemova

University of Amsterdam

XXI April International Academic

Conference on Economic and Social Development

Outline

- Motivation for the study
- Specific features of the EAEU countries
- Data and methodology
- Results and discussion
- Conclusions

Motivation

- Growth and development of modern economies crucially depend on the availability of credit
- External credit (borrowing) importance:
 - High external credit exposure as a reason for ‘sudden stops’ (Mendoza, 2006)
 - Resource-dependent countries tend to over-borrow abroad in good times (Gavin et al. 1996; Kaminsky, Reinhart, Vegh 2005; Mendoza, Terrones 2008; Reinhart, Reinhart 2009; Frankel 2010)
 - High external credit leads (usually) to high internal credit to GDP ratio (Mendoza, 2006)

Motivation

- Internal credit importance:
 - Minsky's instability hypothesis – importance of internal credit in creating business cycles
- Credit developments and resulting instability are contagious (Kaminsky, Reinhart, Vegh 2003):
 - Herding behaviour (Banerjee 1992; Bikhchandani, Hirshleifer, Welch 1998; Calvo, Mendoza 2000)
 - Trade linkages (Nurkse 1944; Gerlach, Smetts 1996; Charemza et al. 2009)
 - Financial linkages (Shleifer, Vishny 1997; Kaminsky, Reinhart 2000; Kodres, Pritsker 2002)

Motivation

- Economic integration in the CIS
 - Fragmentations of integration attempts
- CU (CEA, EAEU)
 - No preliminary criteria for membership
 - Uncertainty before signing
 - Political
 - In terms of implementation
 - No threshold values for major economic indicators **before signing**
 - Sustainability issues
 - Internal and external shocks resistance
 - Ambitious goals – common economic policy etc.
- Sustainability analysis includes check of common cycles and potential for financial integration
 - Analysis of financial cycles as a proxy of financial integration analysis

Specific features of the CU countries

- **Belarus** – the least stable country
 - high inflation
 - low GDP and investment growth (and level)
 - severe economic dependence on Russia
- **Kazakhstan** – a resource-rich country
 - reliance on oil production
 - monetary policy to fight-off inflation
 - highest proportion of investments in GDP among the EAEU countries
 - reliance on foreign investments to boost economic growth
- **Russia** – fully experiences ‘resource-curse’
 - relies heavily on oil exports
 - consumption as a major driver of aggregate demand has been exhausted (by 2012-2013)
 - economically dominant country
 - most of the tariffs in the CU are Russian (95%)
 - largest share of import tariffs (87,97%)
 - expected EAEU specialization – aircraft, space-rocket, shipbuilding, atomic energy etc.

Data and methodology

- Data period
 - Belarus (2002:1 – 2019:2)
 - Kazakhstan (2001:4 – 2019:1)
 - Russia (2000:4 – 2019:1)
- Data used (quarterly)
 - total outstanding credit to private (population and companies) and public non-financial sector (local currency);
 - CPI (2005=100);
 - real GDP (2005=100);
 - Current account balance;
 - Exchange rate to USD;
 - property prices (index from the first available point of observations)
 - *for further use real indicators (if needed) are calculated using CPI as a deflator*

Data and methodology

- Data sources
 - Bank of Russia (<http://www.cbr.ru/statistics/>),
 - National Bank of Belarus (<http://www.nbrb.by/statistics/>),
 - National Bank of Kazakhstan
(<http://www.nationalbank.kz/?docid=275>),
 - Federal State Statistics Service, Russia (<http://www.gks.ru/>),
 - National Statistical Committee, Belarus
(<http://belstat.gov.by/>),
 - Agency of the Republic of Kazakhstan on Statistics
(<http://www.stat.gov.kz>).

Data and methodology

- Financial cycles (Borio 2014; Borio et al. 2011)
 - Main idea: financial cycles $>$ credit cycles (credit expansion and credit usage)
 - Financial cycles: outstanding credit, credit to GDP ratio, property prices (issues with assets and bonds)
 - CPI-deflated (issues with the choice of CPI as a deflator)
 - Logs averaged
 - Specific features of EAEU countries
 - High role of government sector
 - Reliance on oil-related exports
 - \Rightarrow we try additional indicators
 - Various types of credit (separate government credit)
 - Current account as an indicator of oil exports and resulting import reliance

Data and methodology

- Financial cycles (Borio 2014; Borio et al. 2011)
 - How to determine financial cycles
 - Filtering (allows for integration of several indicators)
 - Using original data (similar to NBER method to determine recessions)
 - We rely on filtering
 - Christiano-Fitzgerald filter for long cycles (4 to 10 years, 16 to 40 quarters – smaller than 8 – 30 years than for developed countries)
 - HP filter to compare results

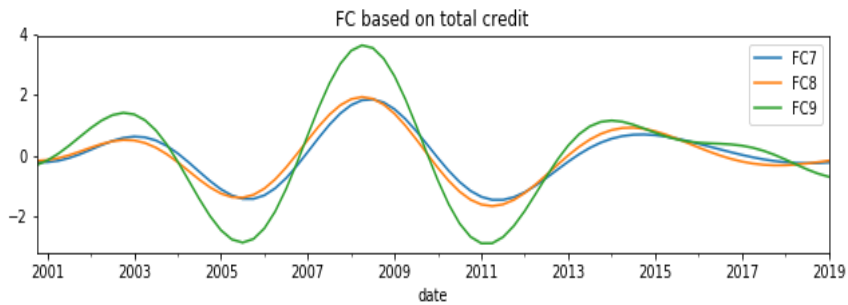
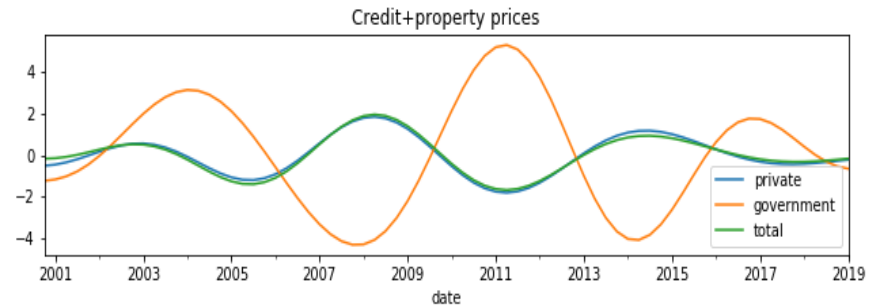
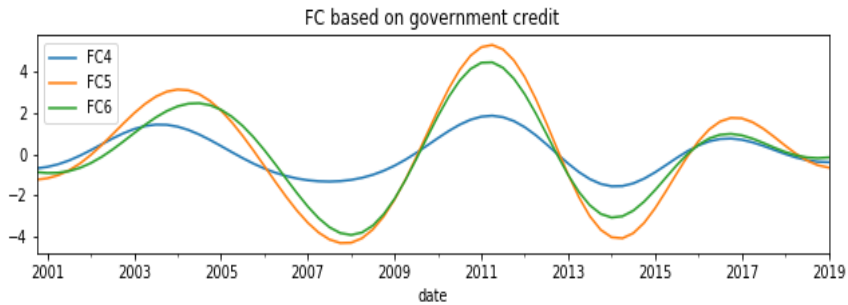
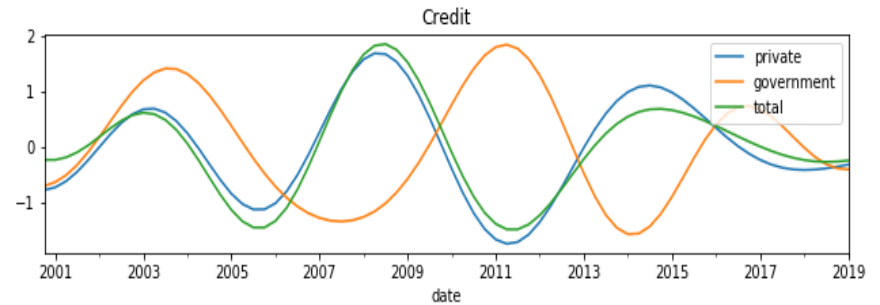
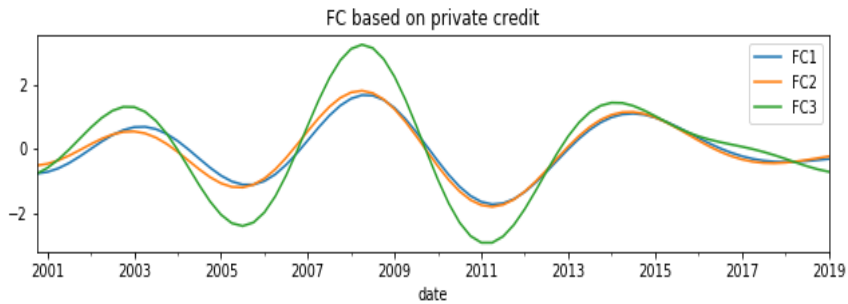
Data and methodology

- 9 measures of financial cycles
 - FC1 = private sector credit + private sector credit to GDP ratio.
 - FC2 = FC1 + property prices.
 - FC3 = FC2 + CA balance to GDP.
 - FC4 = government credit + government credit to GDP ratio.
 - FC5 = FC4 + property prices.
 - FC6 = FC5 + CA balance to GDP.
 - FC7 = total credit + total credit to GDP ratio.
 - FC8 = FC7 + property prices.
 - FC9 = FC8 + CA balance to GDP.

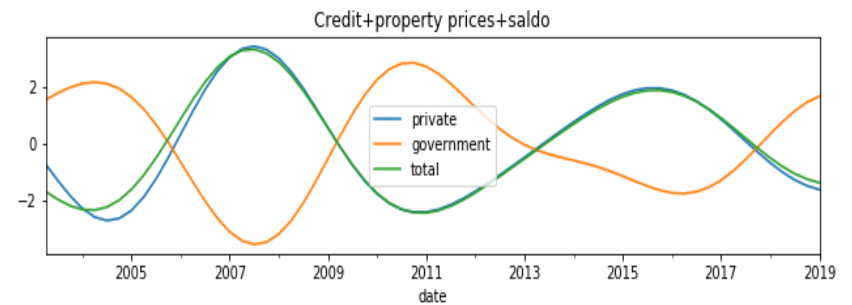
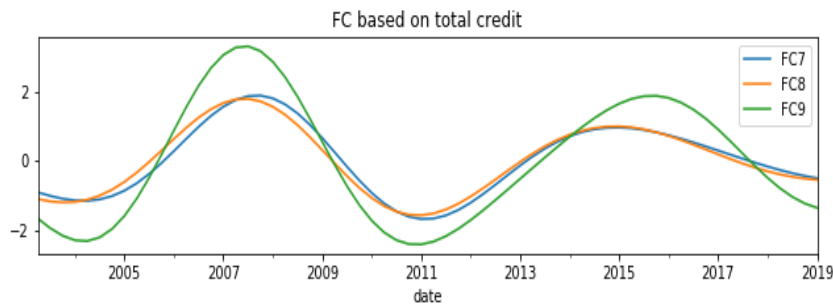
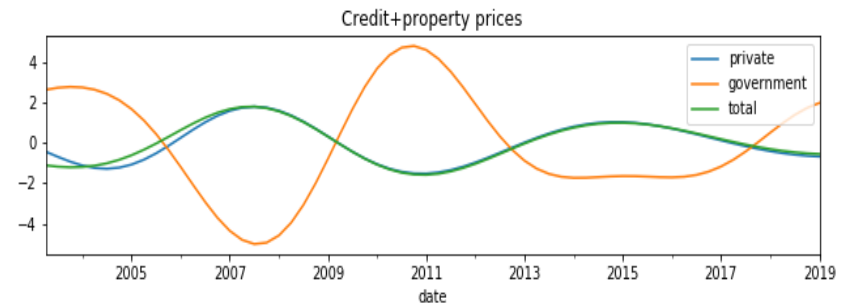
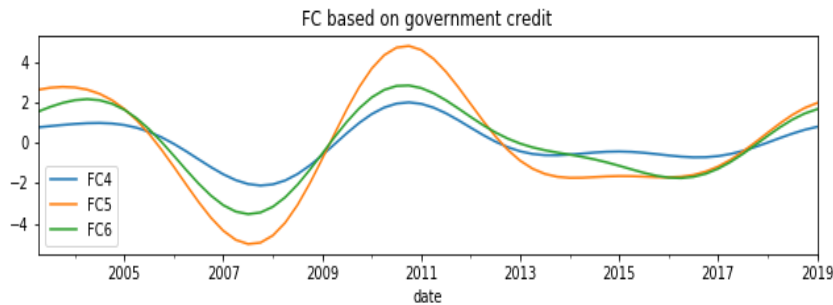
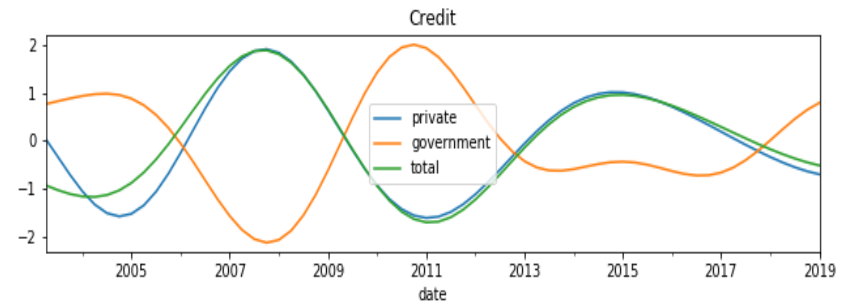
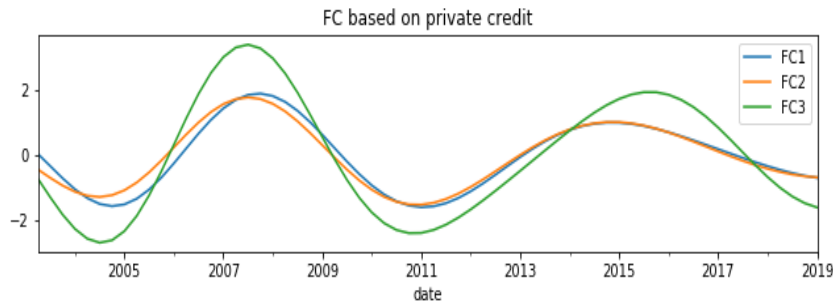
Data and methodology

- Interpreting the cycles (Mendoza and Terrones: 2008, 2012) – *threshold method*
 - Disaggregation into trend and cyclical component
 - Exclusion of seasonal component (additive Census X11, Eviews 7 software)
 - De-trending: HP filter
 - *Threshold* applied to cyclical components of the data
 - $\sigma(l_i)$ - the standard deviation of cyclical component of the time series representing credit
 - φ - the *threshold* (1,5; 1,75; 2,0)
 - if on one or more particular sequential dates it is true that $l_{it} \geq \varphi\sigma(l_i) \Rightarrow$ on this date(s) **credit boom** was observed
 - Credit booms identified are supported also by the spectral analysis results
 - Turning points algorithm (Harding and Pagan 2002) – minimum cycle length, local maxima and minima

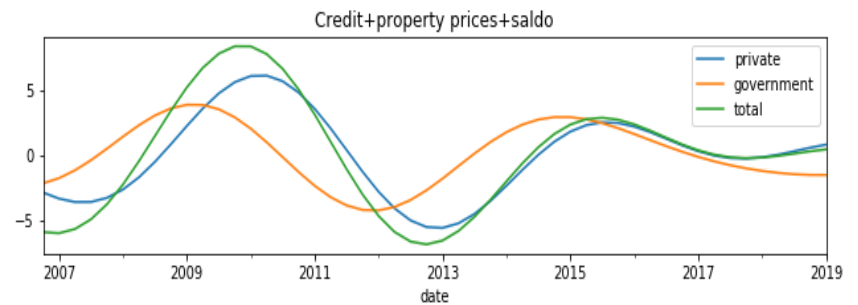
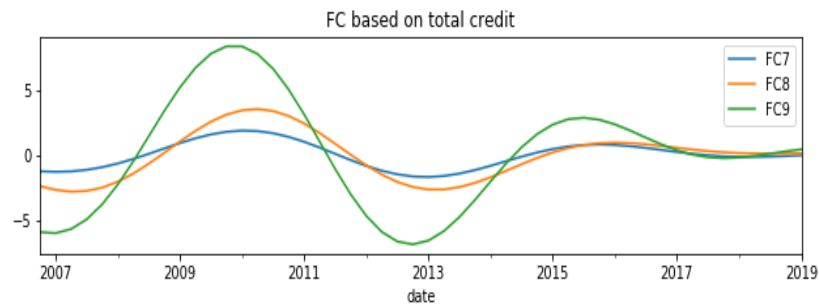
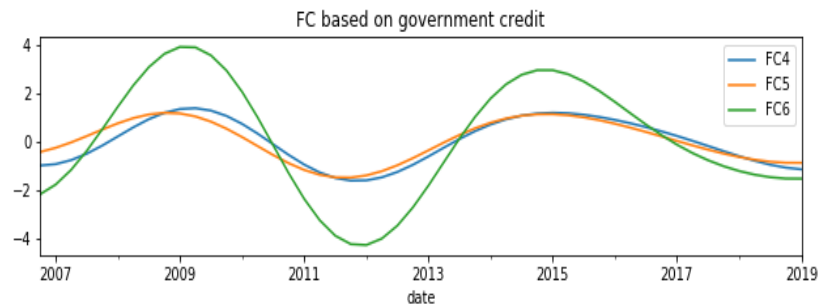
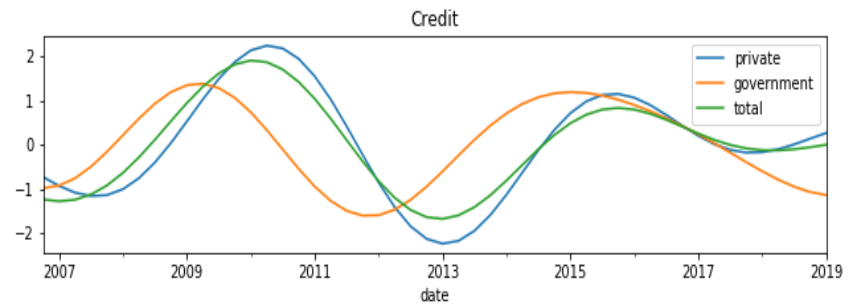
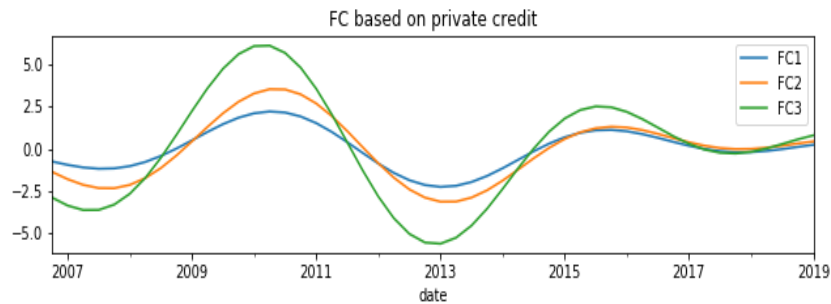
Results and discussion: Russia



Results and discussion: Kazakhstan



Results and discussion: Belarus

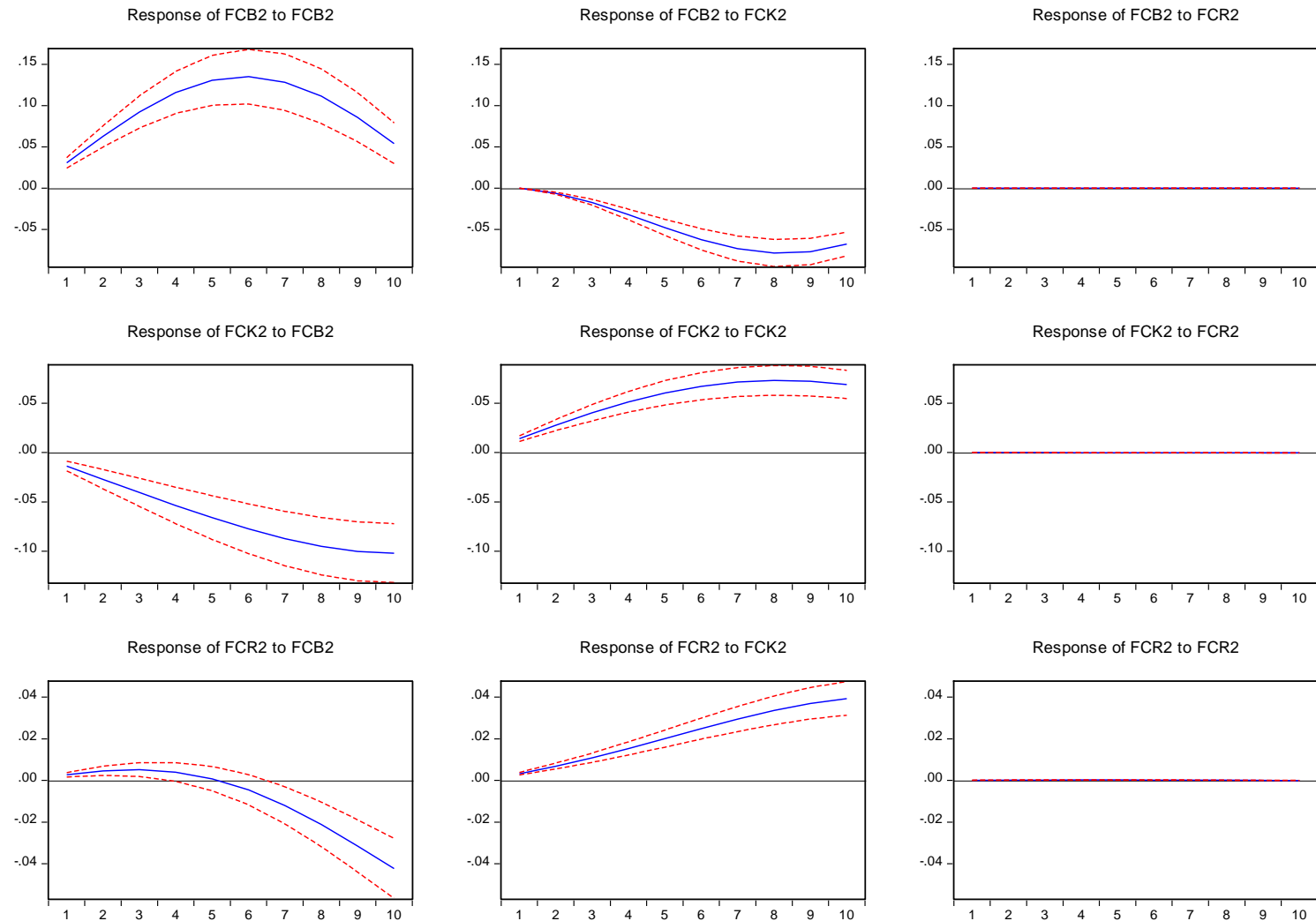


Results and discussion

- Main findings
 - CF and HP filters produce coherent results
 - Different types of credit matter: for all countries financial cycles based on different (government or private) credit indicators peaked before various GDP peaks
 - FC measures including current account balance do not seem good candidates for forecasting future recessions
 - Most promising FC measures to anticipate recessions are based on the most conventional definitions of FCs and include cycles of: credit indicator, its ratio to GDP and property prices.

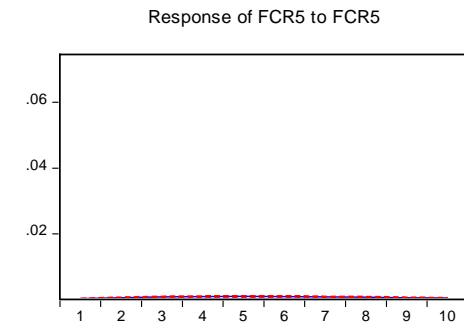
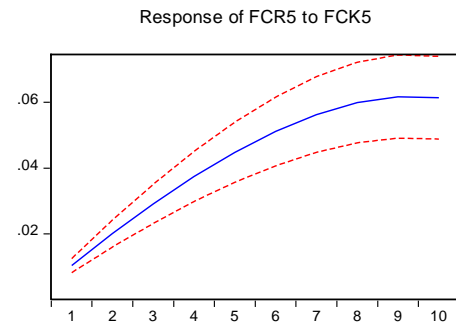
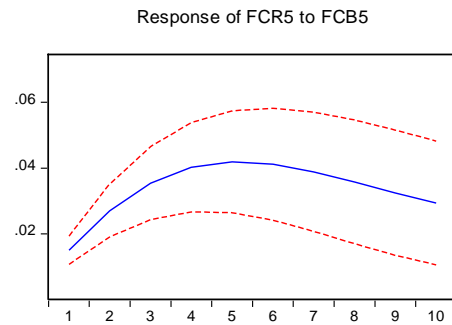
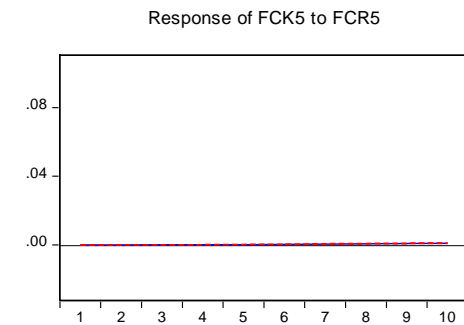
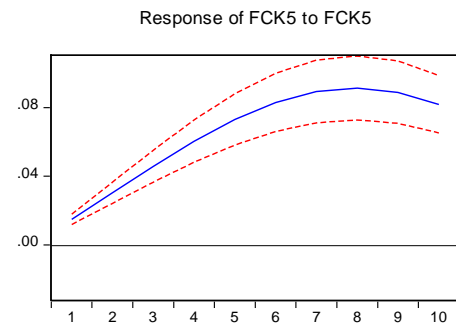
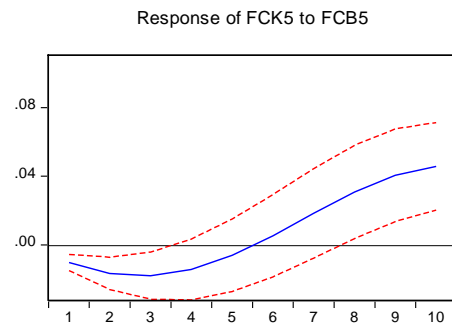
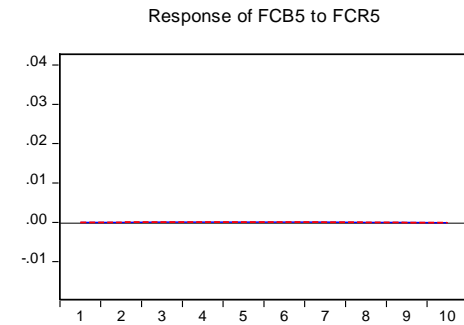
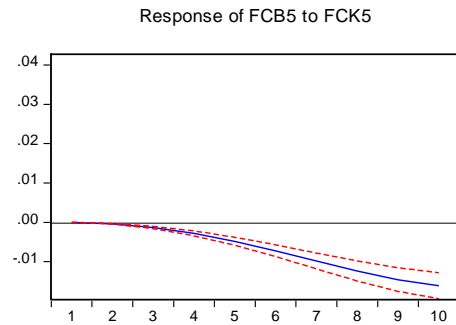
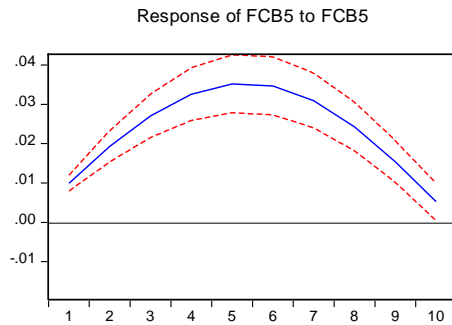
Propagation of financial cycles: FC2

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.



Propagation of financial cycles: FC5

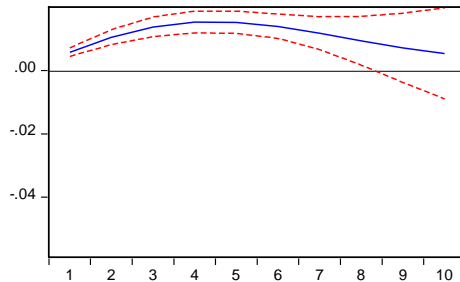
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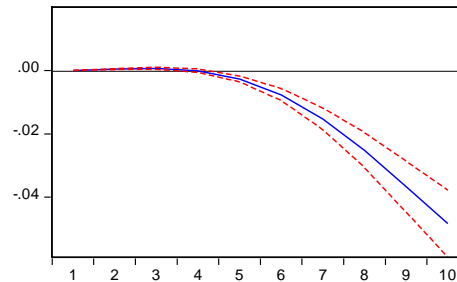
Propagation of financial cycles: FC8

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

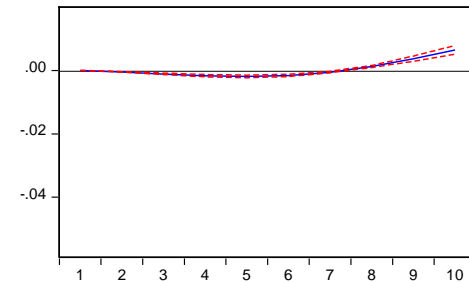
Response of FCB8 to FCB8



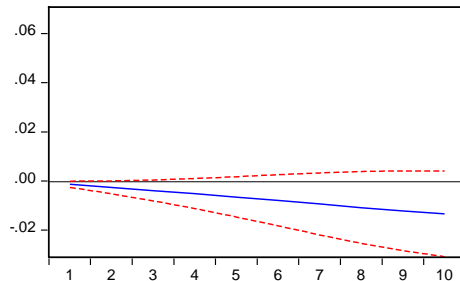
Response of FCB8 to FCK8



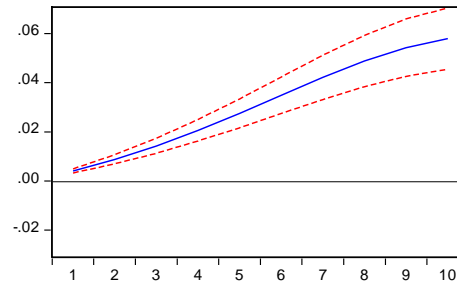
Response of FCB8 to FCR8



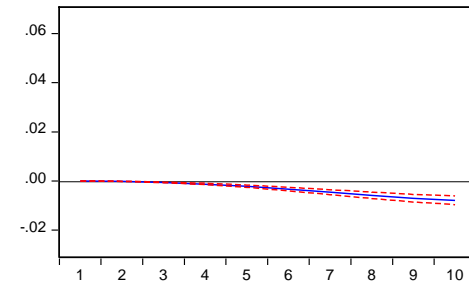
Response of FCK8 to FCB8



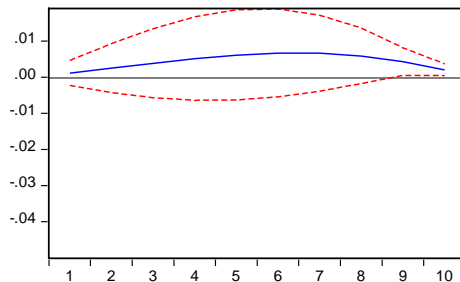
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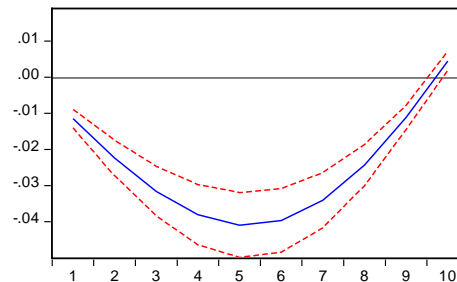
Response of FCK8 to FCR8



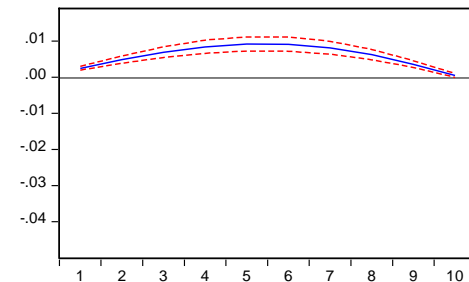
Response of FCR8 to FCB8



Response of FCR8 to FCK8



Response of FCR8 to FCR8



Results and discussion

- Main results for propagation of financial cycles
 - Russia's FC does not explain Belorussia's and Kazakhstan's FCs in terms of variance decomposition
 - Russia's FCs based on private or government credit do not influence Kazakhstan's and Belorussia's FCs
 - Russia's FC based on total credit affects other countries
 - Positive reaction for Belorussia (after 2.5 years)
 - Negative reaction for Kazakhstan (after 1 year)
 - Belorussia's FC for total credit does not influence FCs of Russia and Kazakhstan
 - Belorussia's FCs for private and government credit and all Kazakhstan's FCs significantly influence corresponding FCs in other countries
- Further research into the issue of financial interconnections is needed for these countries

Conclusions

- 2 filters – CF and HP – provided robust results
- 9 FCs tried for each country
- Different types of credit – private, government or total – matter as potential indicators for GDP recessions
- Current account measures do not improve performance of FCs
- Russia's FCs hardly have any effect on the other two countries' FCs
- Kazakhstan's FCs always influence FCs in the other two countries' FCs
- Belorussia's FCs influence the other two countries FCs (except for the FC based on total credit)