Financial Cycles in the Eurasian Economic Union

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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
  - National Bank of Kazakhstan ([http://www.nationalbank.kz/?docid=275](http://www.nationalbank.kz/?docid=275)),
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
  - => 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

  - 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
    - $\varphi$ - the threshold (1,5; 1,75; 2,0)
    - if on one or more particular sequential dates it is true that $l_{it} \geq \varphi \sigma(l_i)$ => 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

[Graphs showing various economic indicators over time, such as FC based on private credit, FC based on government credit, FC based on total credit, Credit, Credit + property prices, and Credit + property prices + saldo.]
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.
Propogation of financial cycles: FC2

Response of FCB2 to FCB2

Response of FCB2 to FCK2

Response of FCB2 to FCR2

Response of FCK2 to FCB2

Response of FCK2 to FCK2

Response of FCK2 to FCR2

Response of FCR2 to FCB2

Response of FCR2 to FCK2

Response of FCR2 to FCR2

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.
Propagation of financial cycles: FC5

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

Response of FCB5 to FCB5

Response of FCB5 to FCK5

Response of FCB5 to FCR5

Response of FCK5 to FCB5

Response of FCK5 to FCK5

Response of FCK5 to FCR5

Response of FCR5 to FCB5

Response of FCR5 to FCK5

Response of FCR5 to FCR5
Propagation of financial cycles: FC8

Response of FCB8 to FCB8

Response of FCB8 to FCK8

Response of FCB8 to FCR8

Response of FCK8 to FCB8

Response of FCK8 to FCK8

Response of FCK8 to FCR8

Response of FCR8 to FCB8

Response of FCR8 to FCK8

Response of FCR8 to FCR8

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