Equilibrium exchange rate in Ukraine:

Quantitative assessment and policy implications for 2011/2012

Prof. Dr. Enzo Weber, Robert Kirchner, Dr. Ricardo Giucci

German Advisory Group

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1. Introduction

- Market exchange rates influenced by two factors:
  - Underlying economic variables ("fundamentals"), such as (relative) inflation rates, interest rates or economic growth
  - "Non-fundamental" factors, leading often to short-run excessive movements in the exchange rate away from their fundamental value. This can involve herd behaviour by market participants or speculative bubbles.
- Goal of our empirical research:
  - What is the appropriate level of the exchange rate UAH/USD according to fundamentals only?
  - In technical language: What is the equilibrium exchange rate UAH/USD?
  - Indicator/Reference value → no target, no forecast
  - Note: This work updates our previous calculations from March 2009

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2. Assessment methodologies: Overview

- Economic literature: Many competing assessment procedures/methods
- Important for checking the validity of results: Implementation and comparison of different approaches
- In our quantitative assessment: 3 different well-established approaches
  i. Purchasing-Power-Parity (PPP)
  ii. External-Sustainability Approach (ES)
  iii. Balance-of-Payments Approach (BOP)
- Latest available data were used in our calculations (depending on the approach, until 2nd quarter/ August 2011)

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3.i. Purchasing-Power-Parity (PPP)

- Basic idea: 1 USD should buy the same amount of goods in all countries → „Purchasing power parity“ or „PPP“
- Otherwise: Arbitrage opportunities through foreign trade will rebalance the exchange rate
- However, lower prices for non-tradable goods in low-income countries (Balassa-Samuelson effect); adjustment for this effect is necessary
- Advantage of PPP approach: Application and result independent from current (fluctuating) market exchange rate
- Time horizon: Long-term reference value
- Quantitative result for **UAH/USD: 8.03**

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3.ii. External Sustainability Approach (ES)

- Basic idea: Calculation of difference between actual current account balance and balance that would stabilize net foreign assets (NFA) at a benchmark level
- NFA: External assets minus external liabilities of whole economy (private and public sector)
- Necessary exchange rate adjustment for this stabilization leads to quantiative result
- Here: Assumption that NFA stay at 2007 level (level before global crisis)
- Time framework: Medium-term reference value
- Quantitative result for **UAH/USD: 9.42**

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3.iii. Balance-of-Payments Approach (BOP)

- Basic idea: Search for the exchange rate that brings equilibrium in the balance of payments (i.e. no change in official reserve holdings)
- Implies that underlying current account balance equals net capital flows
- Similar underlying approach as in (ii), but additional inclusion of net capital flows
- Time framework: Medium-/long-term reference value
- Quantitative result for **UAH/USD: 8.40**

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3. iv. Summary of results

- Overview of quantitative results for UAH/USD:

Method	Value	Time horizon
i. PPP	8.03	Long
ii. ES	9.42	Medium
iii. BOP	8.40	Medium/Long

- Range of UAH/USD consistent with fundamentals: **8.03-9.42**

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4. Interpretation and policy implications

Interpretation:

- Three complementary approaches show broad consensus regarding the concrete values, supporting the robustness of the assessment
- However: Period of high structural change, i.e. uncertainties around such estimations are particularly high

What **are not** the implications of our empirical results?

- Equilibrium exchange rate should not be seen as the value at which the exchange rate should be fixed → Flexible exchange rate is absolutely necessary
- Especially in uncertain times, important to let the market find the equilibrium
- Furthermore, equilibrium values move over time as fundamentals change → In case of worsening of international debt crisis (which cannot be ruled out), this implies a new set of equilibrium values

What **are** the implications of our empirical results?

- Currently, no indication for significant misalignment of current rate (8.00)
- However, the rate is already at the edge of the interval. In case the current pressure on FX continues, better to let the rate move closer to equilibrium (i.e. inside the interval) and protect reserves rather than stem against a fundamentally justified step

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Appendix

- Methodological Notes

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Purchasing-Power-Parity (PPP)

- Starting point: ICP (International Comparison Program) value for UAH/USD in 2005 was 1.68
- Adjustment 2005-2011 accounts for 2 effects:
  1. Relative inflation performance in Ukraine and the US using the respective GDP-deflators
  2. Balassa-Samuelson Effect: Poorer countries (low GDP/capita) have normally exchange rates below their simple PPP value. However, the real exchange rate is expected to rise over time with rising GDP
     - First we adjust for relative income differences in Ukraine and the US (GDP/capita) in 2005. Adjustment value (0.276) taken from the literature (Panel-Study by Cheung/Chinn/ Fujii (2007), p. 20). If relative income difference decreases by 1%, real exchange rate appreciates by 0.276%
     - Then we take into account relative growth in real GDP/capita over 2005-2011

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External Sustainability (ES) and Balance of Payments (BOP)

- For both, ES and BOP: Multivariate cointegration analysis („J-curve approach“) on the relationship between trade balance and real exchange rate in Ukraine gives respective value for trade elasticity (0.63 according to long-run impulse response)
- VECM: 4 variables: TB, REER, Income Ukraine and World Income
- Underlying trade balance seasonally adjusted
- Model gives an estimate how much real exchange rate needs to change in order to bring necessary improvement in trade balance. This real (effective) exchange rate change is translated into necessary change in nominal bilateral UAH/USD
- 1% REER adjustment = 1% NEER Adj. = 1% UAH/USD adj.
- ES: What real adjustment brings actual current account/trade balance in line with NFA at 2007 level (benchmark value)
- Real Growth: 4%; Real interest rate 8% payable on NFA
- BOP: Net capital inflows of 4% of GDP assumed (recent value of net FDI inflows after the crisis)

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Contact

Dr. Ricardo Giucci
giucci@berlin-economics.com

Robert Kirchner
kirchner@berlin-economics.com

German Advisory Group
c/o BE Berlin Economics GmbH
Schillerstr. 59, D-10627 Berlin
Tel: +49 30 / 20 61 34 64 0
Fax: +49 30 / 20 61 34 64 9
E-mail: info@beratergruppe-ukraine.de
www.beratergruppe-ukraine.de



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