The Moldovan Leu

Recent developments and assessment of the equilibrium exchange rate

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Background and objective

Background

- Regional developments and worsening of domestic conditions in Moldova affected foreign exchange flows and in turn the exchange rate of the Moldovan Leu throughout 2014 and 2015

Objective of this policy briefing

- Estimation of the equilibrium exchange rate in order to assess if the market rate is in line with underlying fundamentals

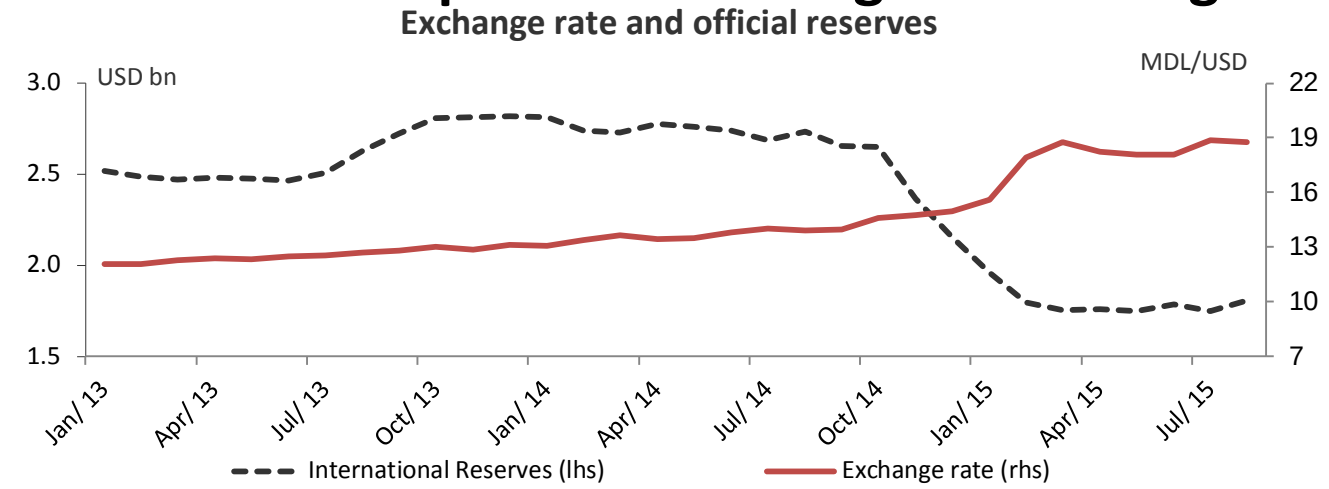
Structure

Part 1: Recent developments affecting the exchange rate

Part 2: Assessment of the equilibrium exchange rate

Part 3: Conclusions and policy implications

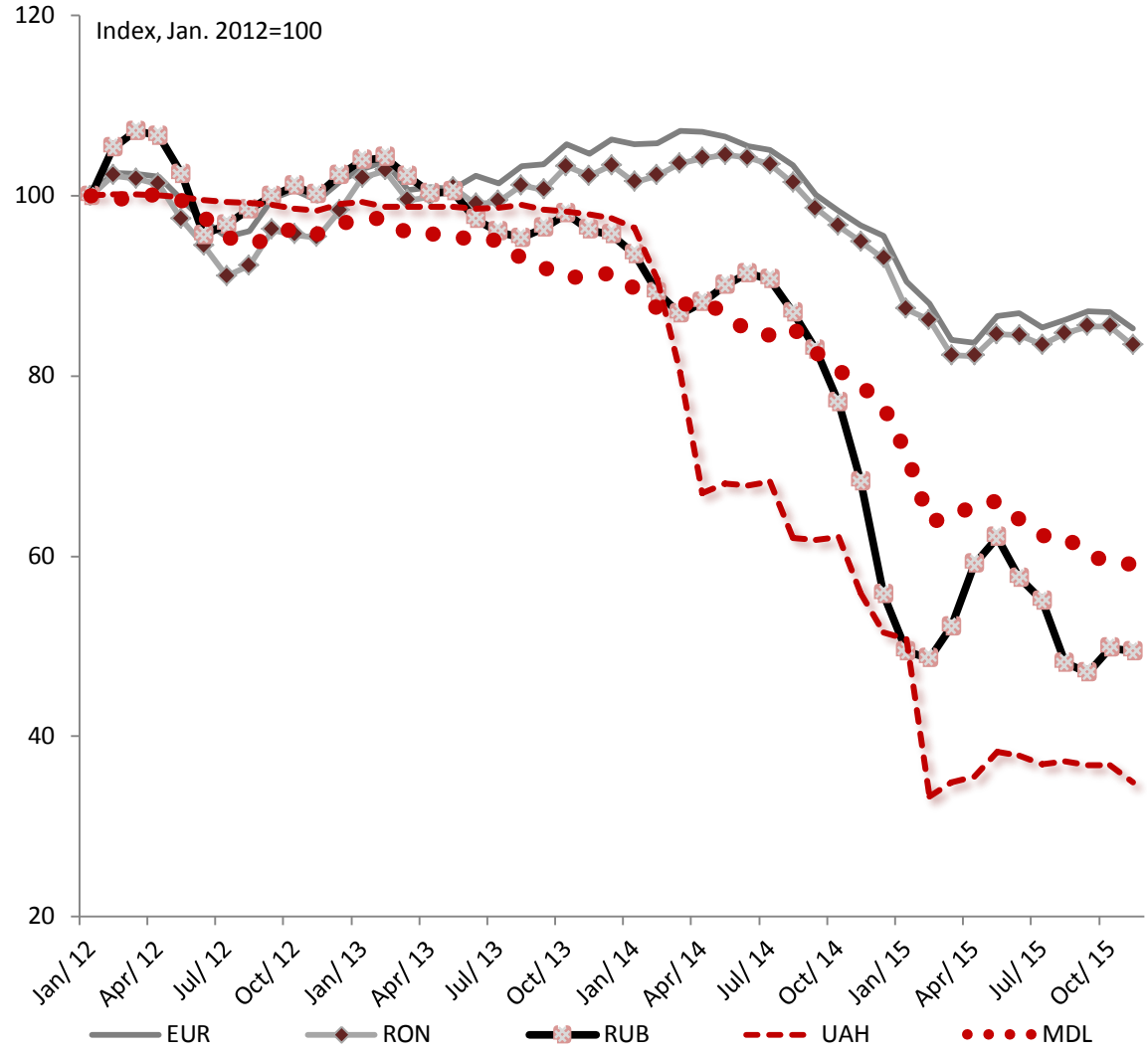
1. Recent developments affecting the exchange rate



Source: National Bank of Moldova

- Moldovan Leu: gradual depreciation trend against the US dollar visible since 2013
- Depreciation accelerated during second half of 2014 turning into exchange rate crisis during mid of January and mid of February 2015
- Moldovan exchange rate crisis triggered by lack of confidence due to bank fraud, political uncertainty after elections and currency crises in Ukraine and Russia
- In addition, signs of panic and speculation showed
- National Bank raised interest rates, intervened in foreign exchange market, thus successfully stabilising the exchange rate and quenching panic and speculative attacks

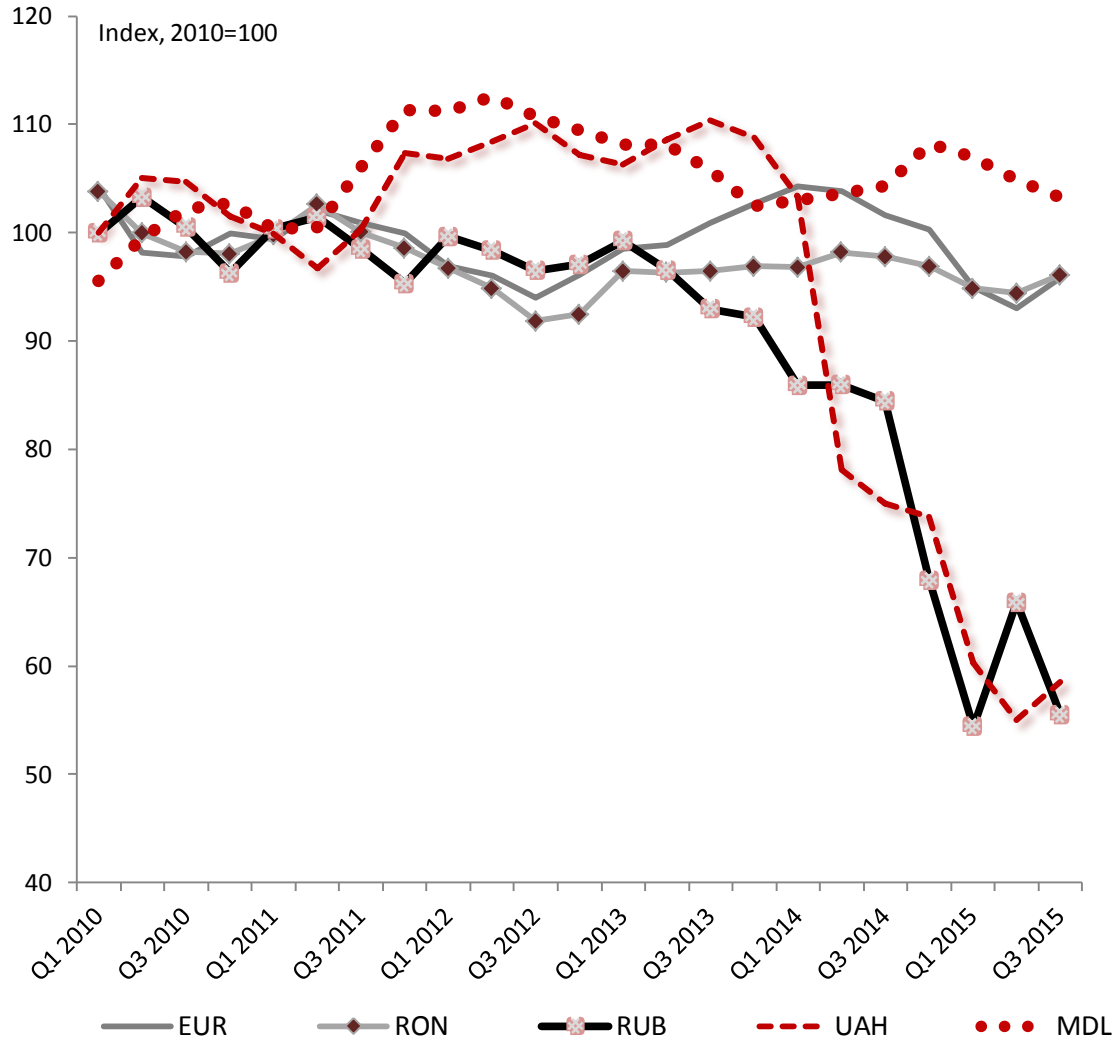
i. Bilateral exchange rates against the USD



Source: Central and National Banks

- Currencies of main trading partners in the CIS region depreciated against the US Dollar
- Ukrainian Hryvnia and Russian Ruble experienced exchange rate crisis in second half of 2014
- Euro and correspondingly Romanian Leu also weakened against US Dollar
- End of 2014 Moldovan Leu also devalued significantly, albeit not to the same extend as some trading partners

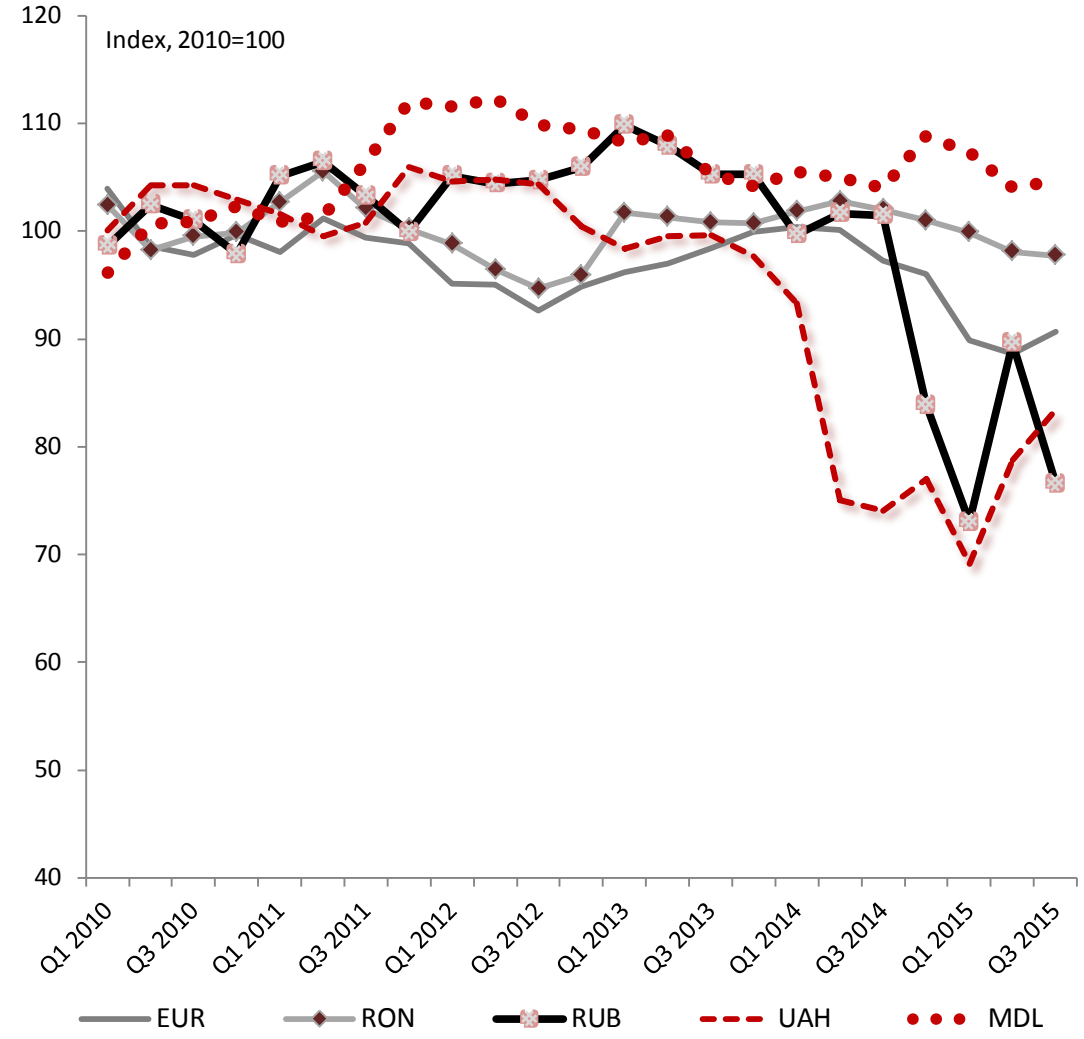
ii. Nominal Effective Exchange Rate (NEER)



Source: BIS, Central and National Banks

- Effective exchange rate shows how domestic currency fared against (trade-weighted) basket of partner currencies
- Thus important measure of international competitiveness
- Data suggest that the Moldovan LEU appreciated against partner currencies on trade-weighted basis, despite devaluation in H2 2014
- As expected Russian Ruble and Ukrainian Hryvnia both depreciated against currency basket of trade partners

iii. Real Effective Exchange Rate (REER)



- REER most important measure of international competitiveness, as it considers how prices developed in comparison to major trading partners
- REER supports notion that Moldovan Leu appreciated by end of 2014
- Russia and Ukraine gained in competiveness; significant despite risen domestic prices (as considered by REER)
- REER suggests increased competiveness of Eurozone

Source: BIS, Central and National Banks

Summary of recent developments affecting the exchange rate

- During the second half of 2014, currencies of major trading partners depreciated significantly against the US dollar
- Moldovan Leu continuously depreciated over the same period but with the onset delayed and to a lesser extent
- Both the nominal effective exchange rate and the real effective exchange rate pointed to a loss in international competiveness of Moldova at the end of 2014

Structure

Part 1: Recent developments affecting the exchange rate

Part 2: Assessment of the equilibrium exchange rate

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2. Assessment of the Equilibrium Exchange Rate

Definition of the equilibrium exchange rate:

- Level of the exchange rate that is determined/justified by underlying economic variables („fundamentals“), such as (relative) inflation rates, interest rates or economic growth

Important: Only indicator/reference value – no target, no forecast

- Market exchange rates are also influenced by further, „non-fundamental“ factors, leading often to substantial short-run movements in the exchange rate away from its fundamental value
- This can involve e.g. herd behaviour by market participants or speculative bubbles

Goal of our empirical research:

- What is the equilibrium MDL/USD exchange rate, i.e. the appropriate level of the exchange rate according to its fundamentals only?
- Special consideration paid to remittance-flows, as they are a key feature of the Moldovan economy

Two approaches

- Economic literature: Many competing assessment methods
- Important for checking the validity of results: Comparison of different approaches
- In our quantitative assessment two well-established approaches are being used
  - **External-Sustainability Approach (ES)**
  - **Balance-of-Payments Approach (BOP)**

- Estimation based on data from the period Q1 1999 – Q4 2014

i. External-Sustainability Approach (ES)

- Basic idea: Calculation of the difference between actual current account balance and balance that would stabilise net foreign assets at a benchmark level
- Net foreign assets: external assets minus external liabilities of whole economy (private and public sector)
- Necessary exchange rate adjustment for this stabilisation leads to quantitative result
- Applied benchmark in our analysis: net foreign assets stay at their respective level of end 2014
- Time framework: Medium-term reference value
- Quantitative result expressed in terms of **MDL/USD: 18.4**

ii. 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 external sustainability approach, but focus on general balance of payments-developments and additional inclusion of net capital flows
- Time framework: Medium-/long-term reference value
- Quantitative result expressed in terms of **MDL/USD: 19.6**

iii. Summary of results

- Overview of quantitative results expressed in terms of MDL/USD:

Method	Value	Time horizon
I. ES	18.4	Medium
II. BOP	19.6	Medium/Long

- Range of MDL/USD consistent with fundamentals: **18.4 - 19.6**
- Current exchange rate of 19.5 (in Q3 2015) firmly in this interval

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3. Conclusions and policy implications

Conclusions:

- By end of 2014 indication that Moldova had lost competitiveness against trading partners
- Rapid depreciation at the beginning of 2015, however, NBM successfully stabilised
- Exchange rate is now broadly in line with its fundamentals, i.e. equilibrium value
- From that perspective, no immediate exchange rate changes expected
- However, the latter assumes that economic fundamentals abroad and domestic economic situation remain practically unchanged

Policy implications:

- Need to avoid another crisis of confidence affecting the exchange rate due to worsening domestic economic outlook
- “Macroeconomic crisis” management is required to stabilise economic situation and minimise downside risks
- Independent monetary policy pre-requisite for stabilisation of economy

Appendix: Methodological Notes

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 Moldova gives respective value for trade elasticity (0.61 according to long-run impulse response)
- VECM: 4 variables: TB (=log (EX/IM), RER, Income Moldova and World (Proxy: Russia/EU)
- 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 MDL/USD
- 1% REER adjustment = 1% NEER Adj. = 1% MDL/USD adj.
- ES: What real adjustment brings actual current account balance in line with NFA at end-2009 level (benchmark value)
- Real Growth: 4%; Real interest rate: 5% (payable on NFA):
- Net capital inflows of 5% of GDP (medium-term FDI) and remittances of 28% of GDP assumed

Alternative Approach: 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
- But: Balassa-Samuelson effect needs to be taken into account:
  - Poorer countries (low GDP/capita) have normally exchange rates below their simple PPP value, as prices for non-tradable goods are typically lower in low-income countries
  - The real exchange rate is expected to rise over time with rising relative GDP/productivity
- Advantage of PPP approach: Application and result independent from current (fluctuating) market exchange rate
- Time horizon: Long-term reference value
- Why not applied in this presentation:
  - PPP does not include remittances in the analysis, which are vital to the supply/demand balance in the FX market
  - Important feature of the Moldovan economy would be missing and thus the results not be representative for the current situation
  - Having said that, calculating PPP values has some merits in showing where the long-term reference value would be in the absence of exchange rate supporting remittance-inflows

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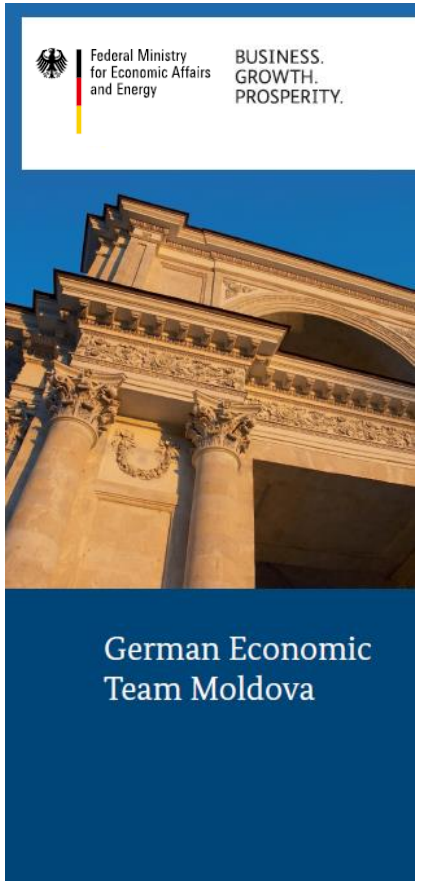

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