

# Stress Testing of the Households Sector in the Kyrgyz Republic

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## Introduction and motivation

- Economic shocks in 2008-09 and 2014-15.
- Price and exchange rate fluctuations.
- Appreciation of Kyrgyz som vis-à-vis Russian ruble reduced remittances of Kyrgyz labor migrants.



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## Introduction and motivation

- Using household stress testing to assess the resilience of the financial system to possible insolvency of households.
- Assess the effect of various possible economic shocks on household resilience.

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## Data and methodology

- Vulnerability:  $V_i = I(Inc_i - CE_i - BE_i > 0)$
- Exposure at default:  $EAD = \sum_i V_i/n$
- $Loss = \sum_i V_i D_i$
- $LGD = Loss / \sum_i D_i$
- $NW_i = I(A_i - D_i < 0)$
- $LossUC = \sum_i V_i D_i NW_i$
- $LGDUC = LossUC / \sum_i D_i$

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## Data and methodology

- We use the KIHS 2017 survey.
- Income module.
- Expenditure module.
- Loan interest rate 0.1722 in urban areas, 0.3378 in rural areas.
- Necessary expenditures: KGS 32093 p.a.



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## Data and methodology

- Vulnerable households: 5.3% in urban, 7.2% in rural areas.
- Loss=KGS 1.7 bln in urban areas.
- Loss=KGS 2.6 bln in rural areas.
- LGD=42% in urban areas.
- LGD=67% in rural areas.



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## Data and methodology

- Calculation of assets.
- Household personal property module.
- LossUC=KGS 1.6 bln in urban areas.
- LossUC=KGS 1.9 bln in rural areas
- Loss=KGS 1.7 bln in urban areas.
- Loss=KGS 2.6 bln in rural areas.

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## Data and methodology

- Job loss,
- Income loss,
- Remittances decline,
- Depreciation of Som

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## Data and methodology

- Job loss: Monte Carlo simulation.
- Probit regression of unemployment on gender, education level, age, region.
- Unemployment probability is then  $\hat{p} = \Phi(X\hat{\beta})$
- Unemployment indicator is simulated from the binomial with the parameter  $\hat{p} + \Delta$
- Two scenarios: unemployment increase of 2pp ( $\Delta = 0.02$ ) and increase of 5pp ( $\Delta = 0.05$ )

## Results: Job loss

- No change in household vulnerability.
- No change in loss given default.

## Results: Income loss

- Scenario: 20% of population will lose 50% of income.
- Vulnerable households: 14.6% in urban areas (5.3% baseline), 22.9% in rural areas (7.2% baseline).
- Loss: 2.0 bln KGS in urban areas (1.7 bln baseline), 2.8 bln KGS in rural areas (2.6 bln baseline)
- LossUC: 1.9 bln KGS in urban areas (1.6 bln baseline), 1.9 bln KGS in rural areas (1.9 bln baseline)



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## Results: Decline of remittances

- Scenario: remittances termination for 50% of remittance recipients.
- Vulnerable households: 9.2% in urban areas (5.3% baseline), 17.6% in rural areas (7.2% baseline).
- Loss: 1.7 bln KGS in urban areas (1.7 bln baseline), 2.7 bln KGS in rural areas (2.6 bln baseline)
- LossUC: 1.6 bln KGS in urban areas (1.6 bln baseline), 1.9 bln KGS in rural areas (1.9 bln baseline)



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## Conclusions

- In case of default the effect on financial sector is not significant.
- LGD = 43% in urban and 67% in rural areas.

