POLICY BRIEFING 9 | 2020

German Economic Team
UKRAINE

# Monetary policy transmission in Ukraine

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# Executive Summary

- The NBU has lowered its key policy rate step-by-step from 18% p.a. in February 2019 to 6% in June 2020
- The COVID-19 crisis and the associated policy easing spurred an active discussion on **monetary policy transmission** through the commercial banking sector and its potential hinderances
- Our empirical analysis can be summarized in two key findings:

1. **Interest rate pass-through**

- Pass-through from NBU key rate to deposit rates works well across maturities for all depositors
- Generally weaker pass-through into lending rates, especially in long-terms

2. **Interest rate spread**

- The high spread can be explained by a number of factors outside the direct scope of the NBU‘s monetary policy, such as Rule of Law

**Policy implication:**

- Reform agenda needs to focus on institutional factors, e.g. improving creditor protection rights to reduce lending rates for higher investments and economic growth

# Structure

1. Introduction
2. Theoretical considerations
3. Monetary policy transmission in Ukraine
   - 3.1 Institutional set up & Recent policy conduct
   - 3.2 Empirical strategy & Data
   - 3.3 Transmission into the banking sector
   - 3.4 Analysis of the interest rate spread
4. Conclusion & Policy implications

Annex

# 1. Introduction

**Background:**

- By law, the National Bank of Ukraine (NBU) is mandated to pursue price stability as its primary objective.
- The NBU has lowered its key policy rate step-by-step from 18% p.a. in February 2019 to 6% in June 2020.
- In light of the economic consequences from COVID-19, the latest interest rate cuts were taken in order to support economic activity
- The crisis and the associated policy easing spurred an active discussion on monetary policy transmission through the commercial banking sector in Ukraine and its potential hinderances
- *"Monetary transmission through the banking system turns monetary policy decisions into reality for households and firms and depends to a large degree on the institutional features of each national financial system*." – Gambacorta & Milz (2019)

**Purposes of this Policy Briefing**

- Assessing monetary policy transmission through the banking sector
- Analysing how specific institutional factors, e.g. Rule of law, might affect this transmission

# 2. Theoretical considerations

- **Monetary transmission** turns monetary policy decisions for households and firms into reality as it impacts their consumption and investment behaviour thereby affecting aggregate demand
- This happens through different channels such as the interest rate channel of which the **first stage is the interest rate pass-through:**
  - Describes e.g. how changes in a reference rate such as the key policy rate, (via money market rates) transmit to bank lending rates


  - The better the interest rate pass-through, the more efficient the second stage of the interest rate channel, the transmission of monetary policy from the banking sector to the real economy, can be (given normal credit demand dynamics)
  - ➢ The better the interest rate pass-through, the better the ability to control inflation

**Maturity matters:**

  - Faster for short-term rates or even anticipated if clearly communicated
  - However, banks take into account expectations, i.e. if a change in the policy rate is expected to be temporary, no revision of long term loans/deposits rates happens

# 3.1 Institutional set up ….

**Monetary policy framework:**

- High, volatile inflation rates in the past
- Gradual disinflation strategy led to introduction of inflation targeting in 2016
- Since then a strong relationship between key rate and short-term money market rates developed (Zholud, et al. 2019)
- Relationship between exchange rate and inflation has traditionally been strong and transmission most rapid. The NBU can therefore justify foreign currency inter-ventions to smoothen exchange rate volatility to help achieve inflation targeting.
- NBU's key rate still most important instrument
- Bank lending channel insignificant; interest rate channel dominates due to structure of financial sector (Zholud, et al. 2019)

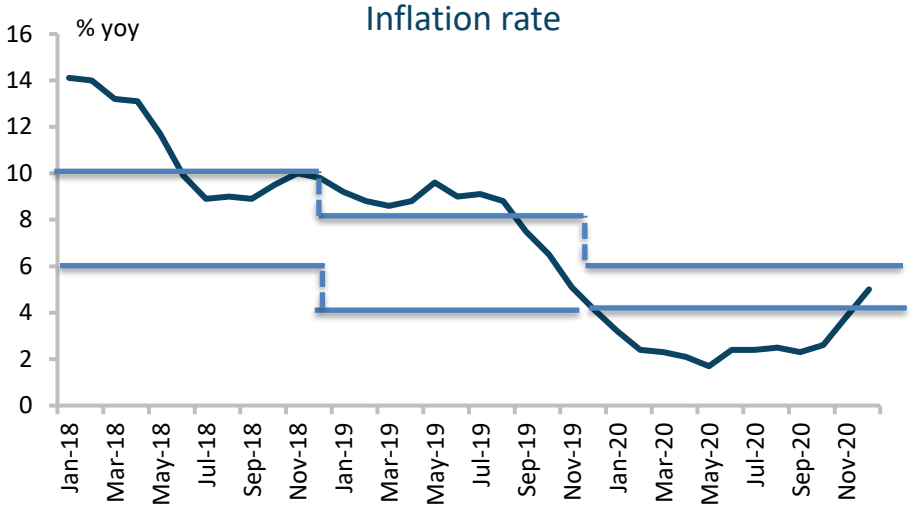
➢ **New monetary policy framework of inflation targeting enhances the transmission of policy**

**Financial system**

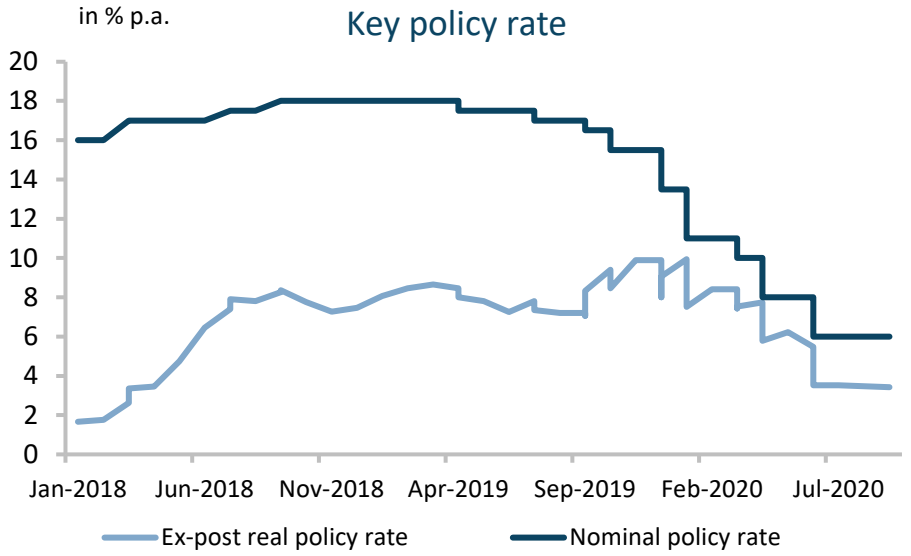
- Bank-centric financial system (bank assets ~84% of total financial assets)
- Banks mainly funded by deposits (large share dollarised, affects transmission negatively)
- Banking system clean-up from 2014 to 2016 (nationalization of PrivatBank and closing of approx. 100 banks)
- Strong decrease in Loan/GDP ratio over last 5 years due to economic recession and banking sector clean up that limited new lending opportunities
- Low development of stock market
- Substantial share of legacy NPLs: 53% in 2019 – 49% (Nov-20)

➢ **Weak financial system harms transmission**

# … and recent policy conduct




*Source: NBU, note: inflation target*




*Source: NBU*

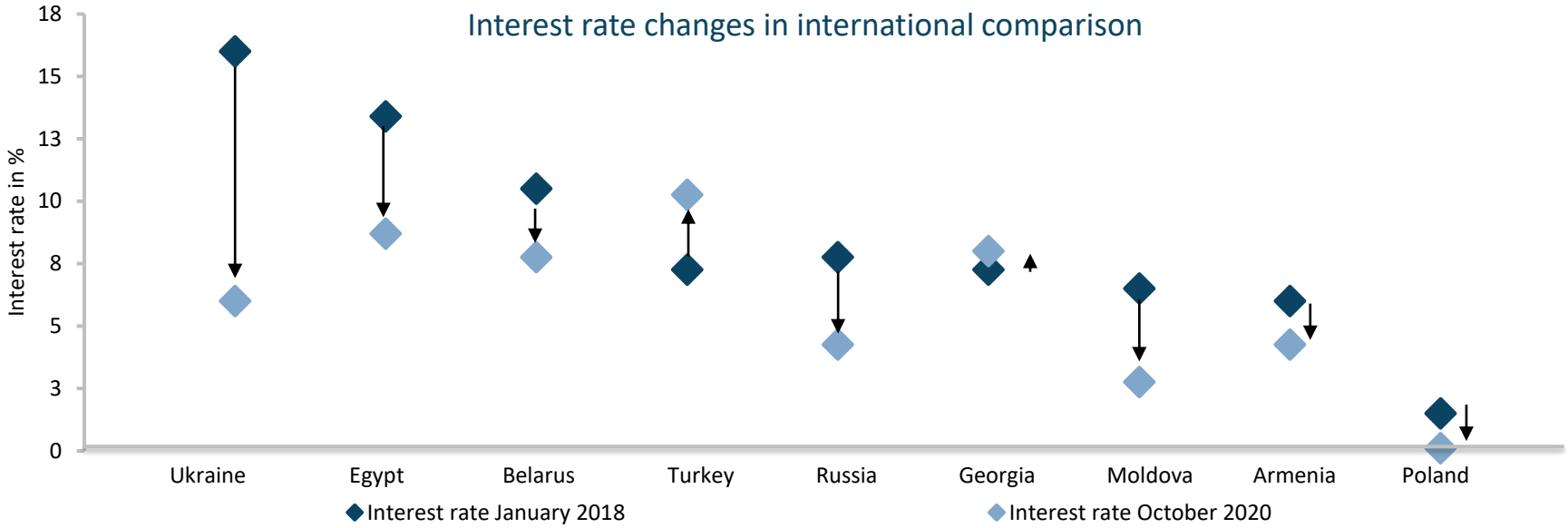
**Inflation:**

- NBU‘s inflation targeting seems to work: Inflation has steadily decreased and reached the target range (4%-6%) at the end of 2019
- Due to deflationary impact of the pandemic, inflation went down below the target range
- However, inflation is expected to rise towards the upper target band due to future economic recovery

**Key policy rate:**

- NBU decreased the policy rate from 18% to 13.5% in 2019 and down to a historic minimum of 6% by June 2020
- Ex-post real rate decreased from 7.5% to 4% over the last 18 months

# International comparison




*Sources: National central banks, for January 2018 we refer to the end of month level.*

- Policy rates are the main instrument that Emerging Market (EM) central banks use to stimulate the economy
- However, this is not without risks. Rate cuts might be…
  - … increasing inflationary pressures
  - … bringing the exchange rate under pressure
  - … destabilising the economy from financial imbalances

# 3.2 Empirical strategy & Data

**Step 1**: **Key policy rate transmission into bank interest rates (descriptive analysis)**

- For different maturities we check the
  - Visual transmission into lagged bank deposit rates and lagged bank lending rates
  - Correlation analysis between key rate and lagged deposit as well as lagged lending rates (Nguyen & Kravchuk (2019) also use a lag of two months)

Banks adjust retail rates to changes in policy rates with some lag (e.g. de Bondt 2005). Reasons might be credit rationing, adverse selection, development of financial system, menu costs and information asymmetry.

**Monthly data for 1M2018 to 9M2020**

- Key policy rate
- Lending and deposit rates (UAH) for households and non-financial corporations (NFC) by maturity

Deposits:
- < 1 year (short-term)
- 1-2 years (medium-term)
- > 2 years (long-term)

Lending:
- < 1 year (short-term)
- 1-5 years (medium-term)
- > 5 years (long-term)

# 3.2 Empirical strategy & Data (cont'd)

**Step 2: <u>Analysis of the determinants of the interest rate spread (quantitative analysis)</u>**

- Interest rate spread calculated from average short/medium term deposit, lending rates

$$\Delta i_t = \frac{1+i_t^{Lending}}{1+i_t^{Deposit}} - 1$$ (Laeven & Majnoni 2003)

- Rule of Law index (ranging from 0 to 1, 1 the highest possible level, World Justice Project), indicators of the index: Constraints on government power, absence of corruption, open government, fundamental rights, order and security, regulatory enforcement, civil justice, criminal justice
- Real GDP per capita (in 2010 USD)
- Inflation rate (harmonized CPI)
- Banking sector market concentration (Top-5 banks' asset share, MC)

**Step 2 a): <u>Cross-country descriptive analysis</u>**

- Analysis of the correlation of interest rate spread with Rule of law
- Analysis of the correlation of interest rate spread with banking sector market concentration
- Analysis of the correlation matrix of all relevant variables

**Step 2 b): <u>Cross-country regression analysis</u>**

- Model construction and assessment
- Results and interpretation

# Previous empirical research in Ukraine

**Key policy rate → lending rates**

- Nguyen & Kravchuk (2019) report a relatively high interest rate pass-through of 0.72 for short-term lending rates (relatively high compared to other EM)
- Interpretation: If the policy rate goes down by 100 bps, short-run bank lending rates fall by 72 bps.

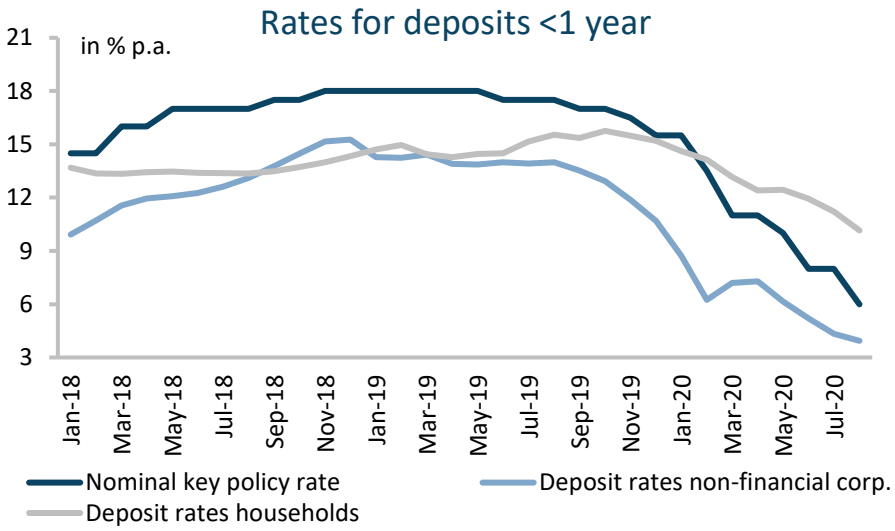
➢ **Evidence suggest a functioning pass-through of key rate to short-term bank lending rates.**

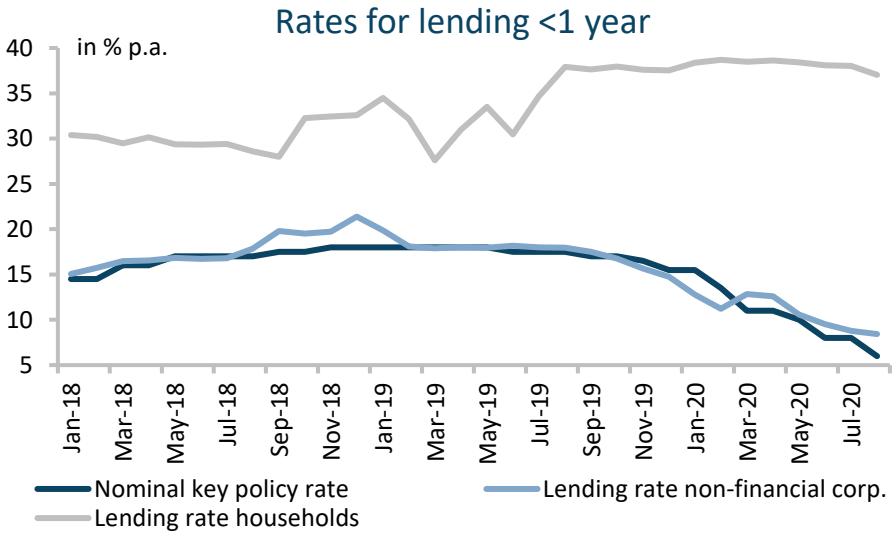
**Key policy rate → deposit rates**

- Interest rates on deposits by individuals react slower, i.e. with a larger lag, to changes in the key rate (Zholud, et al. 2019).
- In countries of Central and Eastern Europe, the pass-through into deposit rates is close to 0.7 (Égert et al., 2008).

➢ **Significant dollarisation of deposits limits effectiveness of monetary policy transmission to the real economy, and** de-dollarisation could increase its effectiveness.

# 3.3 Transmission into the banking sector: Short term




## Deposits <1 year

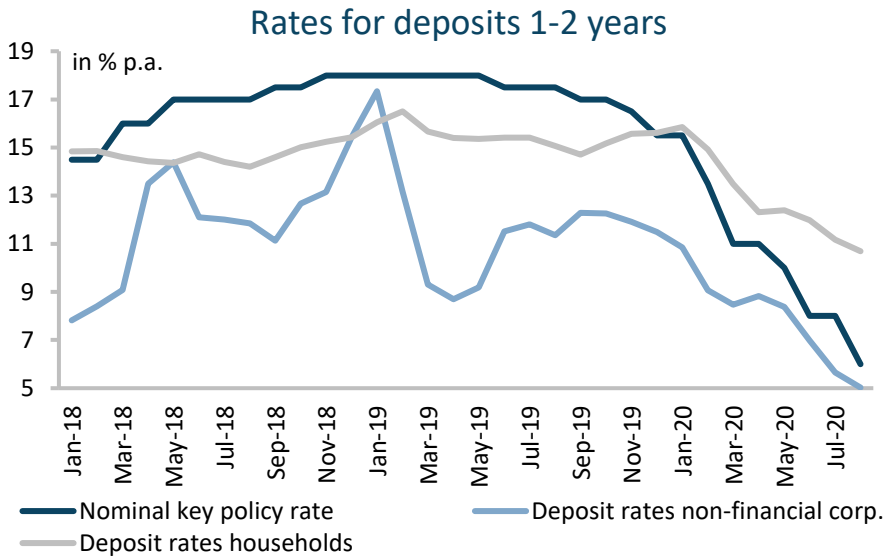
- Deposit rates for NFC mostly adjust to key policy rate changes
- Deposit rates for households less dependent on key policy rate changes

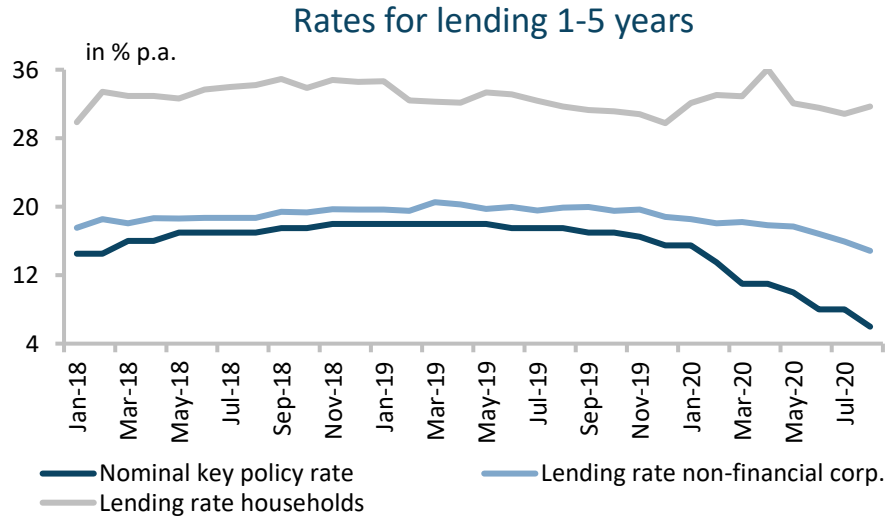
## Lending <1 year

- Lending rates for NFC in line with key policy rate
- Lending rates for households do not move in line with the key policy rate

*Source: NBU, deposit and lending rate with two lags*

# 3.3 Transmission into the banking sector: Medium term




*Source: NBU, deposit and lending rate with two lags*

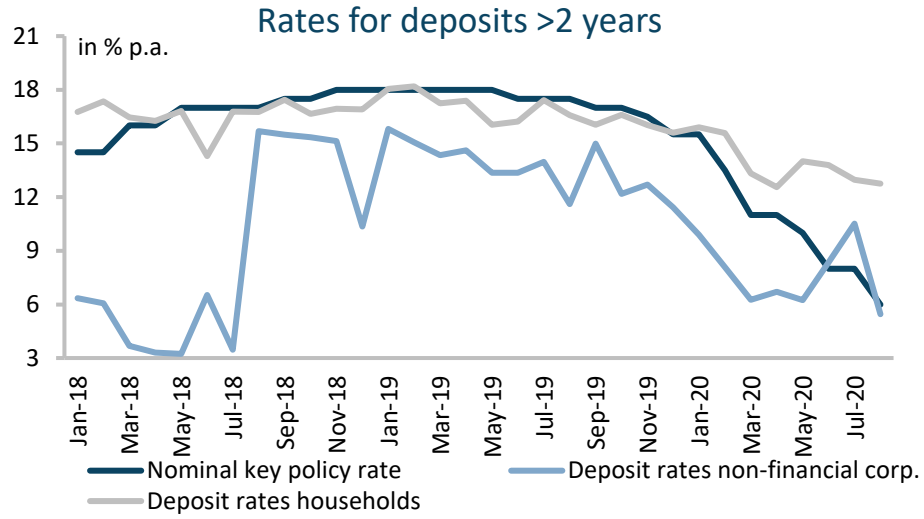
## Deposits 1-2 years

- Deposit rates for NFC mostly in line with key policy rate
- Deposit rates for households mostly in line with key policy rate

## Lending 1-5 years

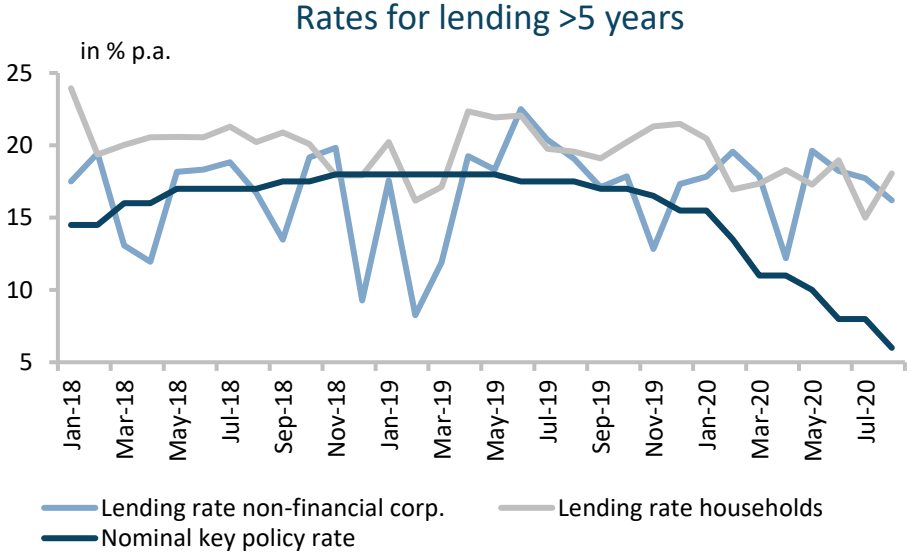
- Lending rates for NFC mostly in line with key policy rate
- Lending rates for households mostly not in line with policy rate changes

# 3.3 Transmission into the banking sector: Long term




## Deposits >2 years

- Deposit rates for NFC only loosely in line with policy rate changes
- Deposit rates for households more in line with key policy rate




## Lending >5 years

- Lending rates for NFC not in line with key policy rate
- Lending rates for households are slightly more in line with the key rate

*Source: NBU, deposit and lending rate with two lags*

# 3.3 Transmission into the banking sector: Summary

Deposits

| | Non-financial corporations | Households |
|---|---|---|
| Short-term | 0.96 | 0.80 |
| Middle-term | 0.75 | 0.91 |
| Long-term | 0.48 | 0.86 |

Lending

| | Non-financial corporations | Households |
|---|---|---|
| Short-term | 0.93 | -0.54 |
| Middle-term | 0.91 | 0.25 |
| Long-term | -0.09 | 0.45 |

*Source: NBU; *Correlation of respective rate (two lags) with the key policy rate, light blue shows a high positive correlation >0.5, grey shows a weak positive correlation with 0.2<X<0.5, white shows the case of no correlation or the wrong sign*

- Theory suggest to use lagged deposit and lending rates
- We find the highest correlation with the key policy rate for two lags

**Deposit:**

- Short/middle-term: High positive correlation for NFC and households
- Long-term: High correlation for households, but weak for NFC

**Lending:**

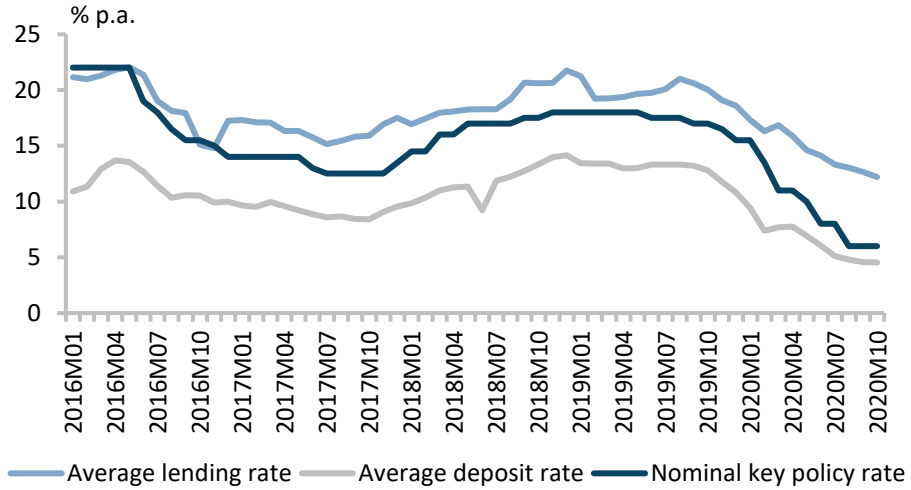
- Short/medium -term: High positive correlation for NFC but not for households
- Long-term: Negative or only weak correlation for NFC and households

**Conclusion:**

- ➢ Strong interest rate pass-through into deposit rates over all maturities and market segments
- ➢ Only short/medium-term lending to NFC shows a strong rate pass-through

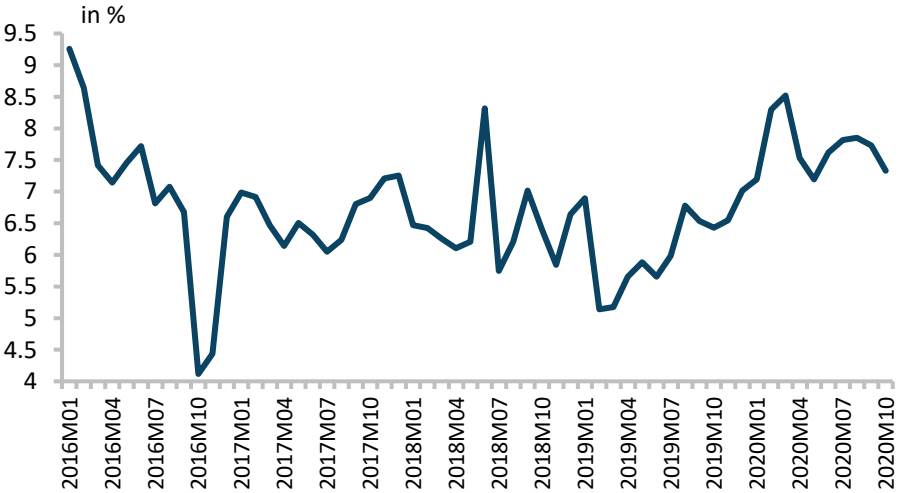
# 3.4 Analysis of the interest rate spread

Lending, deposit and key policy rate




*Source: IMF; lending and deposit rates with two lags*

Interest rate spread Ukraine




*Source: IMF*



**2016 to mid-2019:**

- Lending rate closer to key policy rate
- Deposit rate was usually 5pp below the policy rate

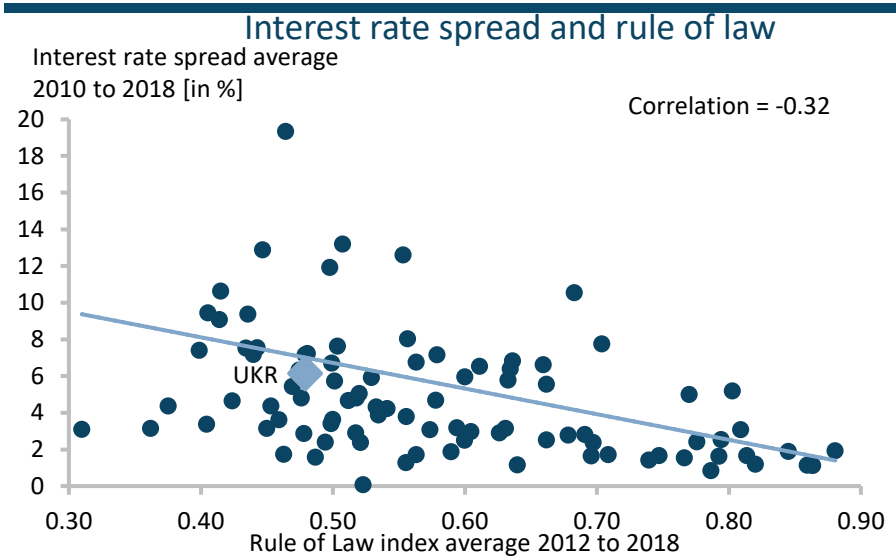
**Mid-2019 to 2020: constant lowering of the key rate**

- Lending rate in line with theory (Zholud, et al. 2019) reacts asymmetrical, i.e. response to a decrease of the policy rate slower and less strong than to an equal increase
- Deposit rate reacts less to changes in the key rate; potentially a lower bound for deposits rate, since UKR banking system mainly relies upon deposits
- 2020: Interest rate spread returns to levels of 2016
- Spike in spread at beginning of lockdown
- Potentially a structural break in M32019

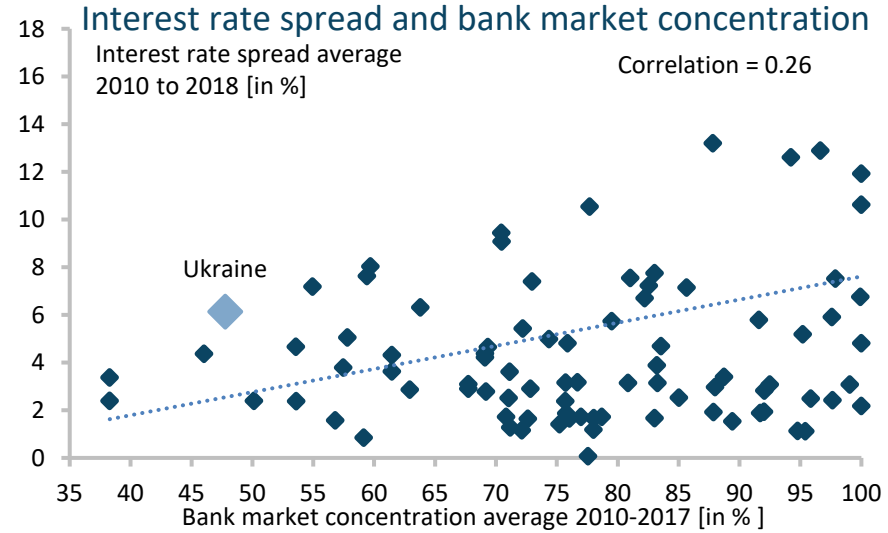
**Conclusion:**

- ➢ No decrease of interest rate spread in light of a decreasing key policy rate (rather the opposite)
- ➢ Institutional factors such as Rule of Law might be one potential reason why lending rates do not follow the policy rate one to one

# 3.4 Analysis of the interest rate spread: Correlation




*Sources: IMF, ECB and World Justice Project; Note: Average short-term and medium-term rates*




*Sources: IMF, ECB and World Bank; Note: Average short-term and medium-term rates*

**Cross-Country analysis: Rule of Law and spread**

- Negative correlation (-0.34) between Rule of Law index (average 2012-2018) and interest rate spread (average 2010-2018)
- Ukraine lies on the trend line with an average Rule of Law index of 0.48 and an average spread of 6.14%
- 2020: Ukraine‘s rule of law index is at 0.51

**Cross-Country analysis: Market concentration and spread**

- Positive correlation (-0.26) between bank market concentration (average 2010-2017) and interest rate spread (average 2010-2018)
- Ukraine lies above the trend line with an average share of the Top-5 banks of 48% and an average spread of 6.14%
- Nov-2020: Ukraine‘s Top-5 banks‘ asset share is 62% as it has increased over the last years

# 3.4 Analysis of the interest rate spread: Correlation

- Cross-country correlation analysis of 87 countries
- Correlation analysis reveals first hints on the signs to be expected in the regression:
  - Rule of Law and GDP per capita are negatively correlated with the spread
  - MC is positively correlated with the spread
  - CPI and spread have a low negative correlation

| | Spread | Rule of Law | GDP per capita | CPI | MC |
|---|---|---|---|---|---|
| Spread | 1 | | | | |
| Rule of Law | -0.32 | 1 | | | |
| GDP per capita | -0.33 | 0.82 | 1 | | |
| CPI | -0.04 | -0.21 | -0.01 | 1 | |
| MC | 0.26 | 0.27 | 0.24 | -0.07 | 1 |

*Source: Own calculation, note: variance inflation factor does not reveal a multicollinearity problem*

# 3.4 Analysis of the interest rate spread: Regression

**Model selection procedure:**

- Subsequent regressions beginning with bivariate model containing only Rule of Law
- Stepwise inclusion of GDP, CPI and market concentration

**Result:**

- Model 4 has lowest AIC, BIC and highest $R^2$

$$\Delta i_{i,t} = \beta_0 + \beta_1 RoL_{i,t} + \beta_2 GDP_{i,t} + \beta_3 CPI_{i,t} + \beta_4 MC_{i,t} + \varepsilon_{i,t}$$

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Rule of Law (RoL) | -13.98***<br>(4.27) | -6.90<br>(7.17) | -9.19<br>(7.67) | **-13.59***<br>**(7.83)** |
| GDP per capita [in 1000] | | -0.07<br>(0.06) | -0.06<br>(0.06) | **-0.06**<br>**(0.06)** |
| CPI | | | -0.07<br>(0.08) | **-0.06**<br>**(0.08)** |
| Market concentration [in %] | | | | **0.16*****<br>**(0.04)** |
| AIC | 595.36 | 595.82 | 597.06 | **542.40** |
| BIC | 600.47 | 603.48 | 607.28 | **554.73** |
| $R^2$ | 0.10 | 0.12 | 0.12 | **0.26** |

Source: Own calculation, *significant at 10%, **significant at 5%, *** significant at 1%

# 3.4 Analysis of the interest rate spread: Regression

**Results from model 4:**

- Rule of Law and GDP statistically significant, negative effect on interest rate spread
- Market concentration is signficant and positively affects the spread

**Interpretation:**

- Increase in the Rule of Law index by 0.1 decreases the interest rate spread by 136 basis points
- For Ukraine, with a current Rule of Law index (2020) of 0.51 this implies:
  - The Rule of Law index to be close to the average level of Greece (0.60)
  - The current interest rate spread of 7.33% would then fall to 5.97%
- Decrease in the share Top-5 banks‘ assets by 10 percentage points decreases the spread by 160 basis points
- For Ukraine, with a current share (Nov-2020) of 62% this implies:
  - The market concentration to be close to the average level of Poland (54%)
  - The current interest rate spread of 7.33 % would then fall to 5.73%

**Conclusion:**

➢ Rule of Law and market concentration have a significant effect on the spread

# 4. Conclusion & Policy implications

**Interest rate pass-through:**

- Pass-through to deposit rates works well with a high correlation across maturities for all depositors
- Generally weaker pass-through into lending rates, especially at the longer term
  - Short-term/medium-term lending to NFC: still rather strong pass-through
  - Long-term NFC lending and lending to households seem to be disconnected from the key rate

**What explains the high interest rate spread?**

- Our empirical research shows that the interest rate spread is significantly impacted by a number of factors outside the direct scope of the NBU‘s monetary policy, such as Rule of Law
- Also competition in the banking sector seems to affect the interest rate spread

**Policy implications:**

- A reduction of the interest rate spread would incentivise more lending to the real economy and would thus lead to higher investments, thereby fostering economic growth
- Reform agenda needs to focus on institutional factors e.g. improving creditor protection rights, as well as on competiton aspects

# About the German Economic Team

Financed by the Federal Ministry for Economic Affairs and Energy, the German Economic Team (GET) advises the governments of Moldova, Georgia, Ukraine, Belarus and Uzbekistan on economic policy matters. Furthermore, GET covers specific topics in other countries, such as Armenia. Berlin Economics has been commissioned with the implementation of the consultancy.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Implemented by

# Annex 1: Correlation analysis

## Deposit

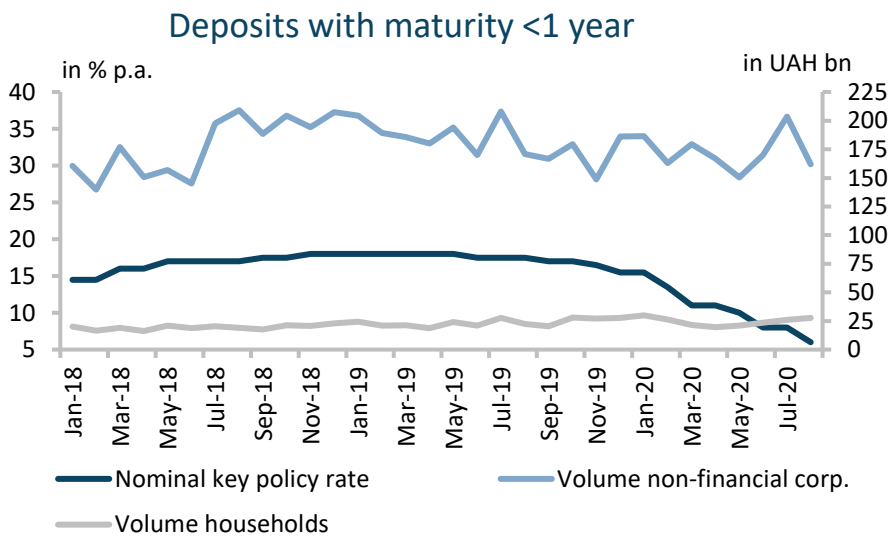
| | Short-term | | Middle-term | | Long-term | | Average short- and middle-term | Average correlation |
|---|---|---|---|---|---|---|---|---|
| | Non-financial corporates | Households | Non-financial corporates | Households | Non-financial corporates | Households | Households and non-financial corporates | |
| Lending rate without lag | 0.96 | 0.66 | 0.70 | 0.82 | 0.39 | 0.87 | 0.88 | 0.75 |
| Lending rate with one lag | 0.97 | 0.74 | 0.74 | 0.86 | 0.44 | 0.86 | 0.91 | 0.79 |
| Lending rate with two lags | 0.96 | 0.80 | 0.75 | 0.91 | 0.48 | 0.86 | 0.90 | 0.81 |
| Lending rate with three lags | 0.92 | 0.84 | 0.75 | 0.92 | 0.53 | 0.81 | 0.86 | 0.80 |

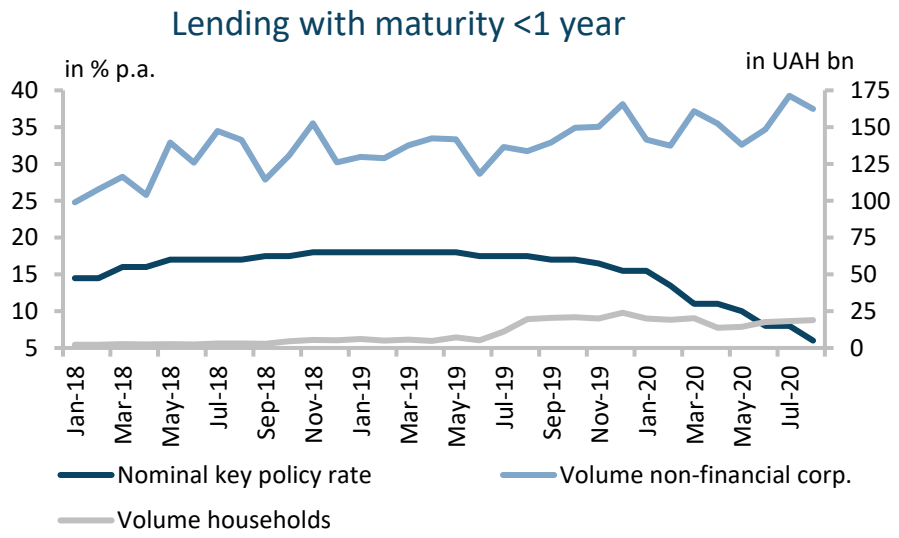
## Loans

| | Short-term | | Middle-term | | Long-term | | Average short- and middle-term | Average correlation |
|---|---|---|---|---|---|---|---|---|
| | Non-financial corporates | Households | Non-financial corporates | Households | Non-financial corporates | Households | Households and non-financial corporates | |
| Lending rate without lag | 0.95 | -0.70 | 0.82 | 0.26 | -0.11 | 0.47 | 0.88 | 0.37 |
| Lending rate with one lag | 0.95 | -0.63 | 0.87 | 0.26 | -0.10 | 0.48 | 0.92 | 0.39 |
| Lending rate with two lags | 0.93 | -0.54 | 0.91 | 0.25 | -0.09 | 0.45 | 0.92 | 0.40 |
| Lending rate with three lags | 0.89 | -0.44 | 0.93 | 0.22 | -0.04 | 0.40 | 0.91 | 0.41 |

*Source: NBU; own calculation*

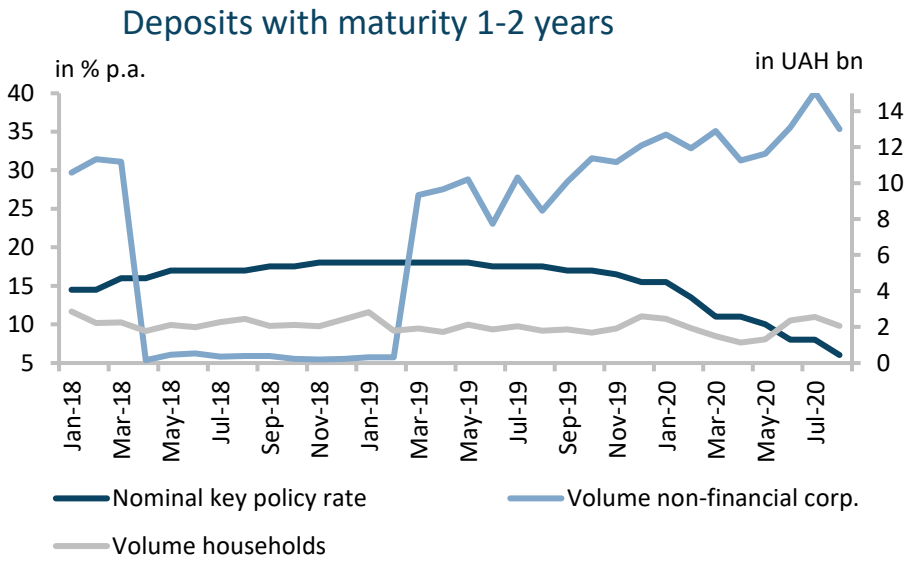
# Annex 2: Short-term lending/deposits volumes

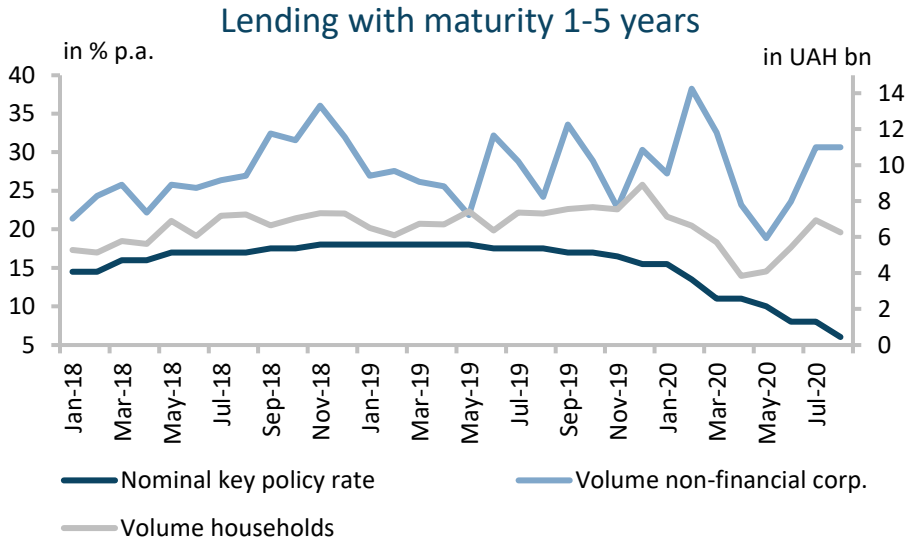



*Source: NBU, own calculation, Nominal key policy rate with two lags*

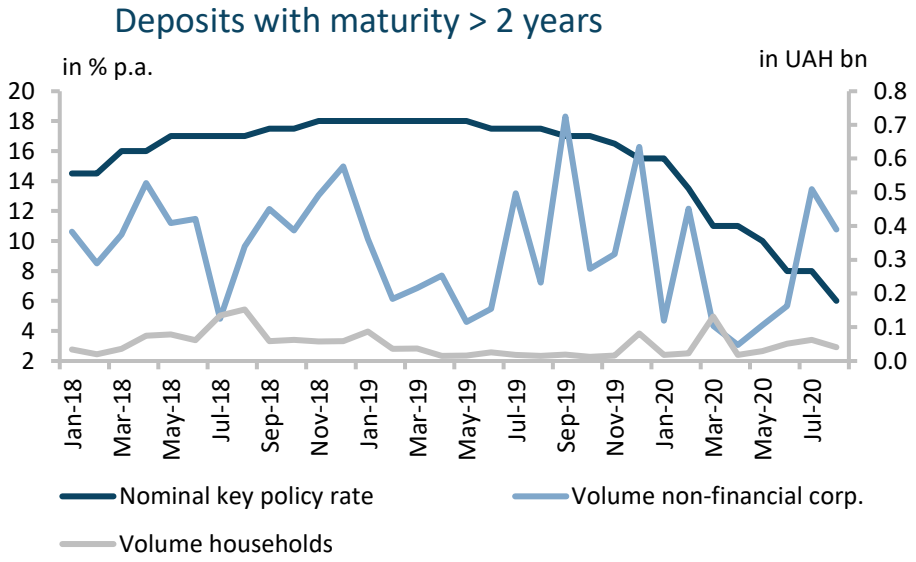
# Annex 3: Medium-term lending/deposits volumes

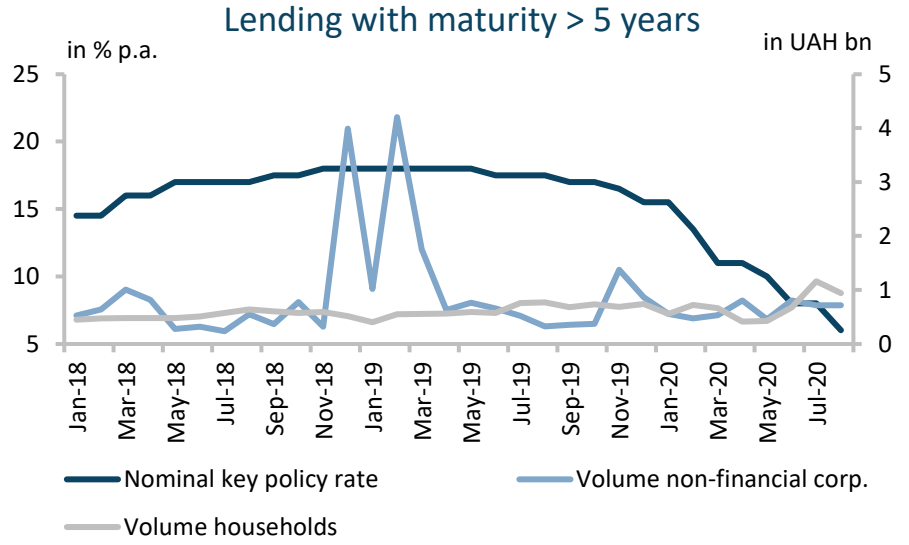



*Source: NBU, own calculation, Nominal key policy rate with two lags*

# Annex 4: Long-term lending/deposits volumes

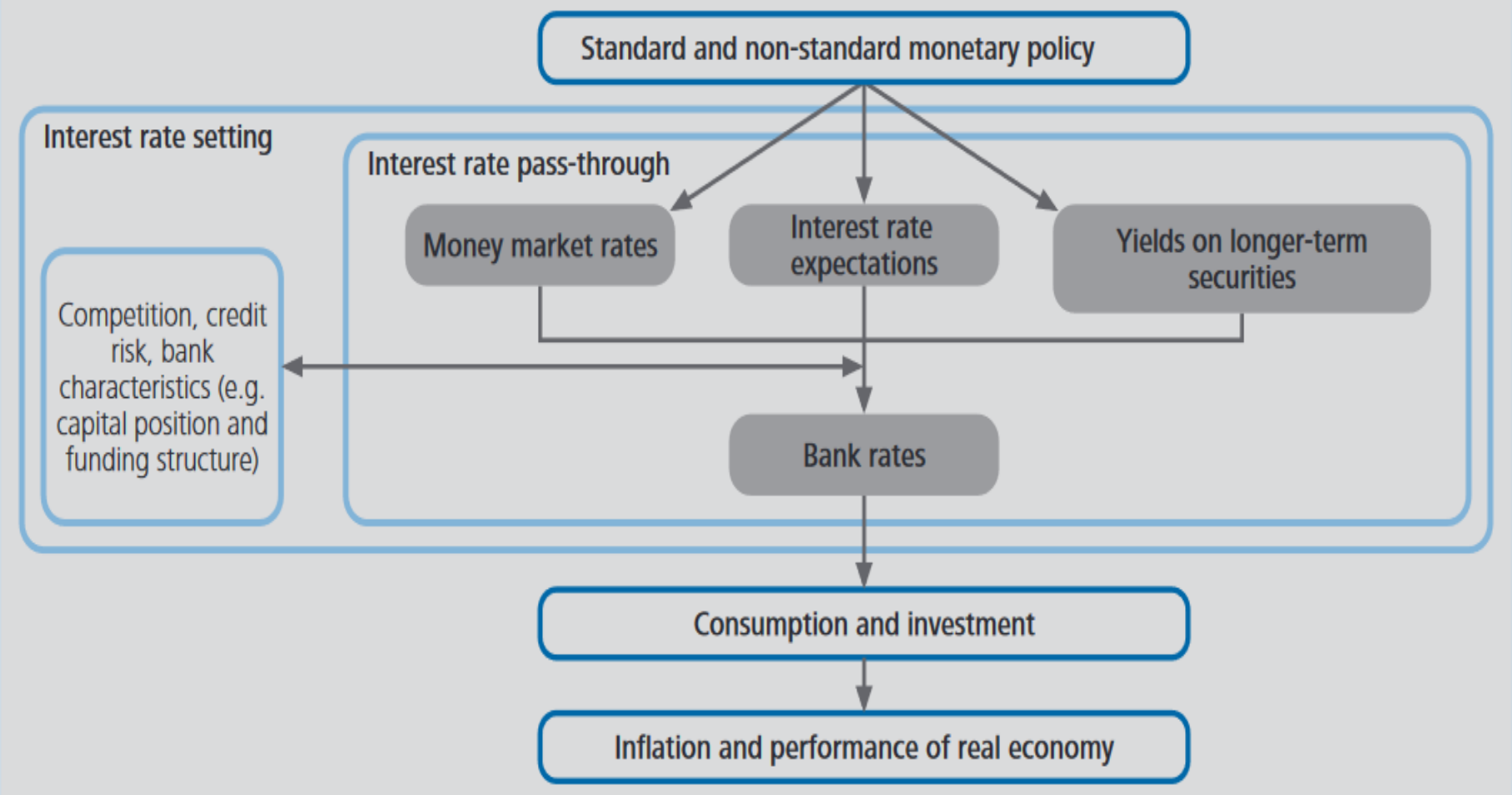



*Source: NBU, own calculation, Nominal key policy rate with two lags*

# Annex 5: The interest rate channel

## Interest rate channel




Source: Deutsche Bundesbank, 2019

# Literature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