Monetary policy in the Dominican Republic during COVID-19

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Fadua Camacho
Joel González
Nabil López
Salomé Pradel

CEMLA Joint Research Program – 2021

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Introduction

- In response to the COVID-19 crisis, most Central Banks reacted promptly and aggressive, and the Central Bank of Dominican Republic was no exception.

- In addition to a sharp cut on the monetary policy rate, a vast array of new instruments emerged that helped provide liquidity to the financial system and support credit flow.

- The aim of this paper is to explain the set of measures used by the CBDR and estimate its effects through a semi-structural macro model with a financial block.

Monetary policy response to COVID-19

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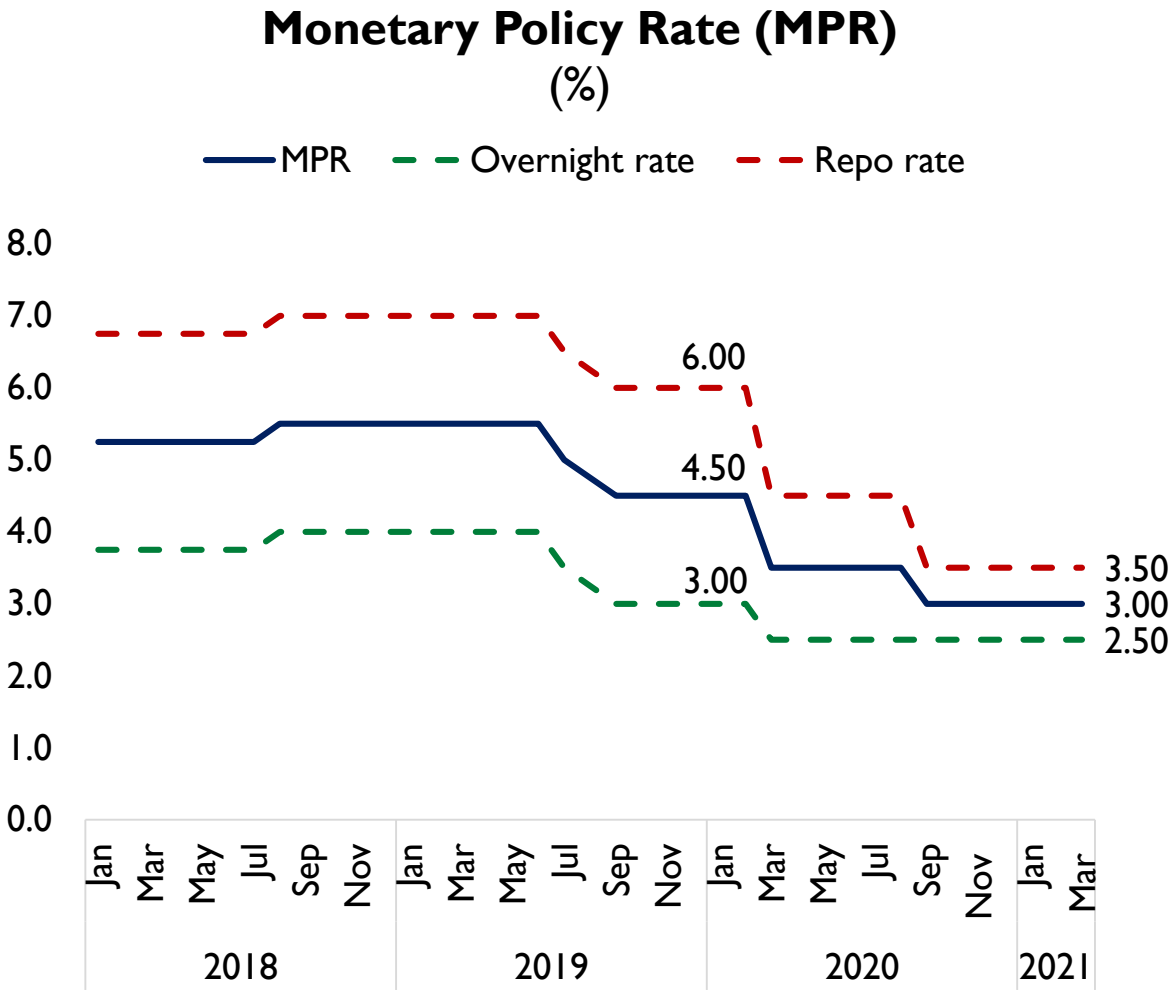
Monetary policy implementation in the DR

- The **main objective of the CBDR is price stability**, as established in the Dominican Constitution and in the Monetary and Financial Law 183-02.
- To achieve the price stability goal**, the CBDR has implemented since 2012 an inflation targeting (IT) regime as its monetary policy strategy**, which implies a commitment to achieve an explicit inflation target of 4.0% ± 1.0%, within a 24-month policy horizon.
- **As a reference for the CBDR stance, a monetary policy rate (MPR) is used,** complemented with other instruments such as open market operations (OMO), reserve requirements, among others.
- **The implementation of the IT regime in DR has been successful in achieving a significant decrease in both the level and volatility of inflation**. Likewise, it has reduced the exchange rate pass-through and strengthened the anchoring of inflation expectations to the target announced by the CBDR.

Since March 2020, the CBDR has implemented a broad set of expansionary monetary measures, including a 150 basis points reduction of the MPR and liquidity provision…



Liquidity in local currency for RD$215 billion (5% of GDP)

- Short term Repos (up to 360 days)
- Release of reserve requirements to increase private credit
- Financing facilities for productive sectors, MSMEs and households

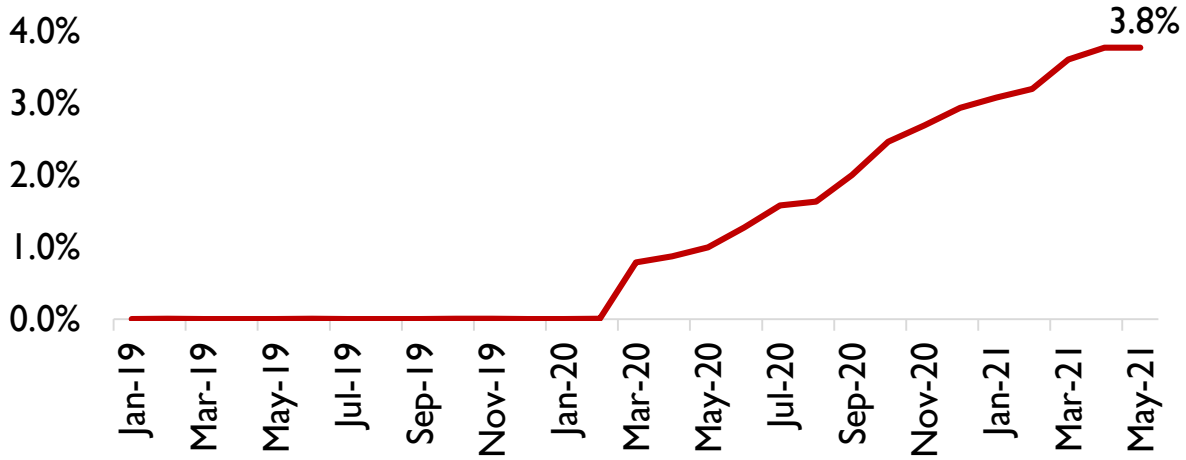
In addition, special regulatory measures have been implemented to assure high levels of liquidity and capitalization in the financial system...

Special regulatory measures

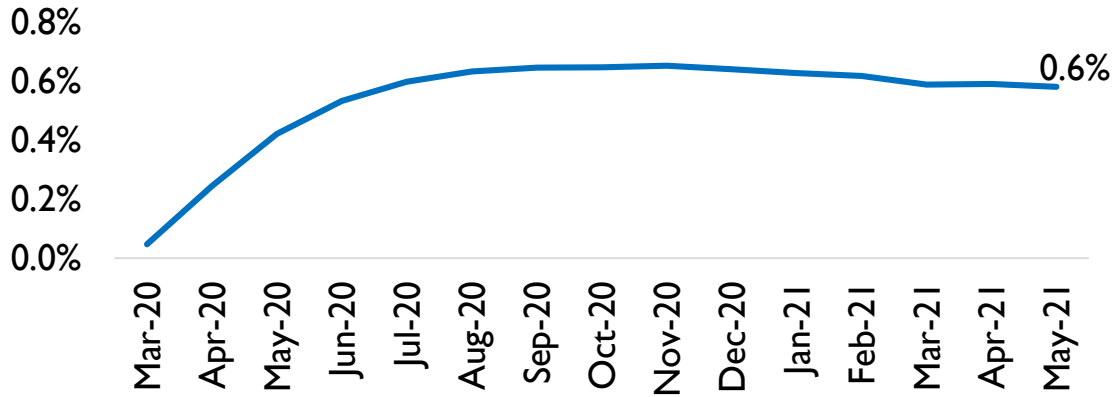
- **Maintain unchanged credit ratings and provisions of debtors** at the level outstanding prior to the pandemic (February 29, 2020).
- **Facilitate debt refinancing and restructurings** at lower interest rates, more favorable terms and keeping debtor's credit rating unchanged.
- **Financing granted through Central Bank facilities will be classified with risk category A,** with zero provisions and with a weighting of 0 in the calculation of the solvency index.

In this regard, liquidity allocated through the facilities currently sums up to 4.4% of GDP…

Repo and credit facilities
(As % of GDP)



Resources provided through lower reserve requirements
(As % of GDP)



Financial system required provisions, Dec. 2020

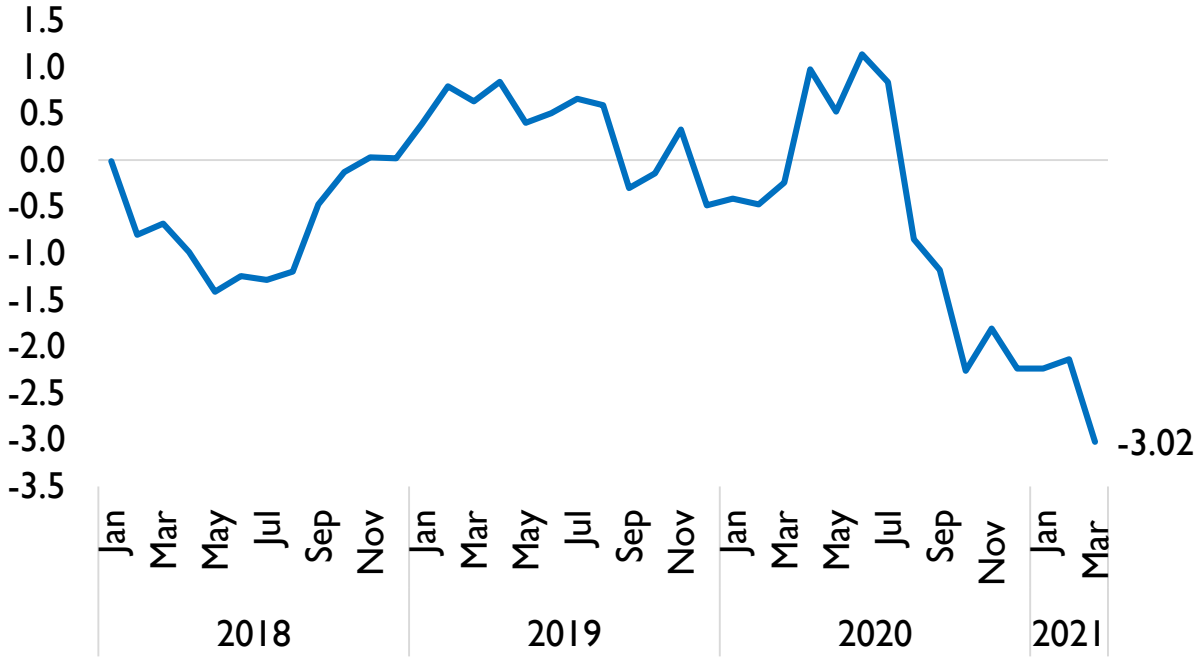
	Required in absence of measures	With COVID-19 measures	Impact
RD$ millions	65,350.7	33,997.8	31,352.9
As % of GDP	1.5%	0.8%	0.7%

Source: CBDR

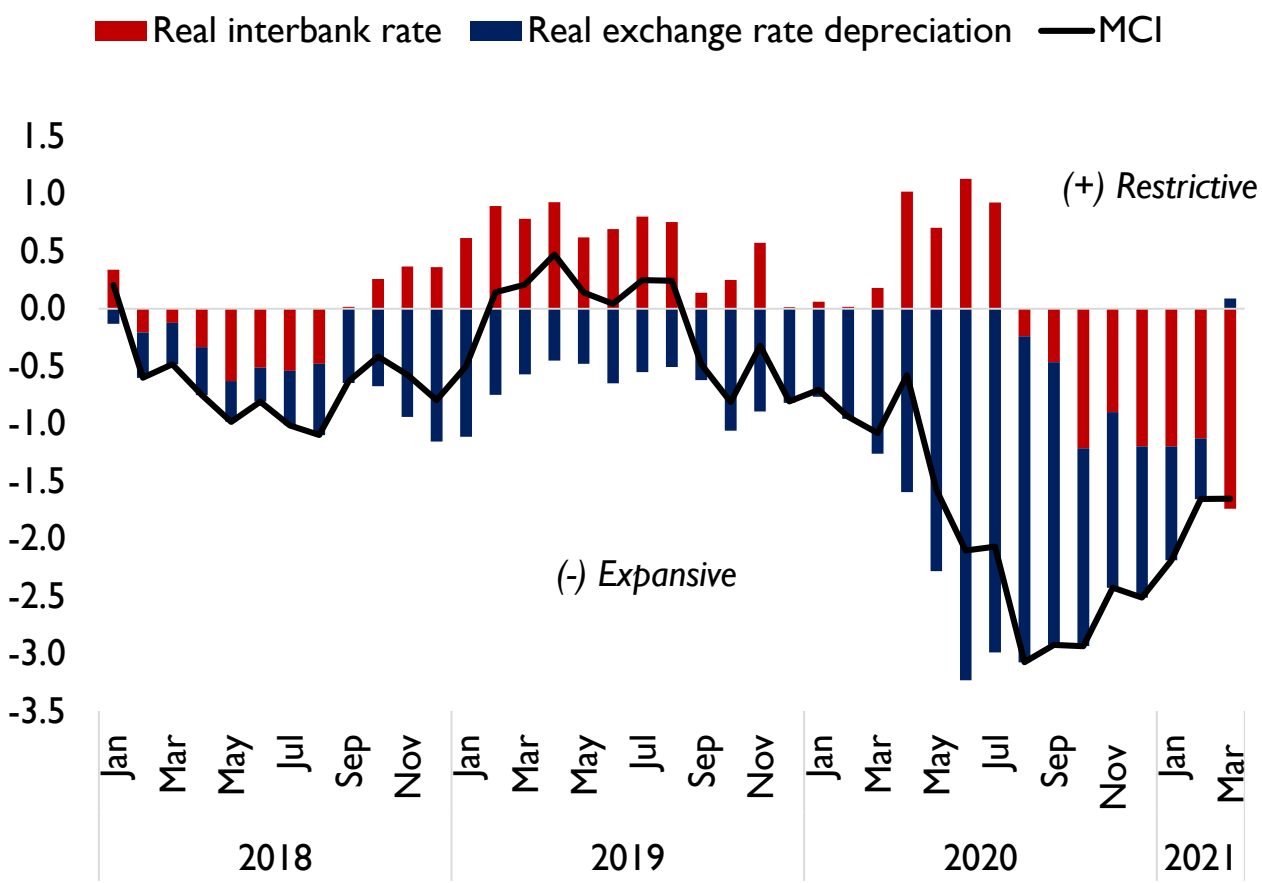
As a result, the monetary policy stance turned highly expansive, as evidenced in some indicators…

Monetary policy stance

Real interbank rate – Neutral real interest rate (%)

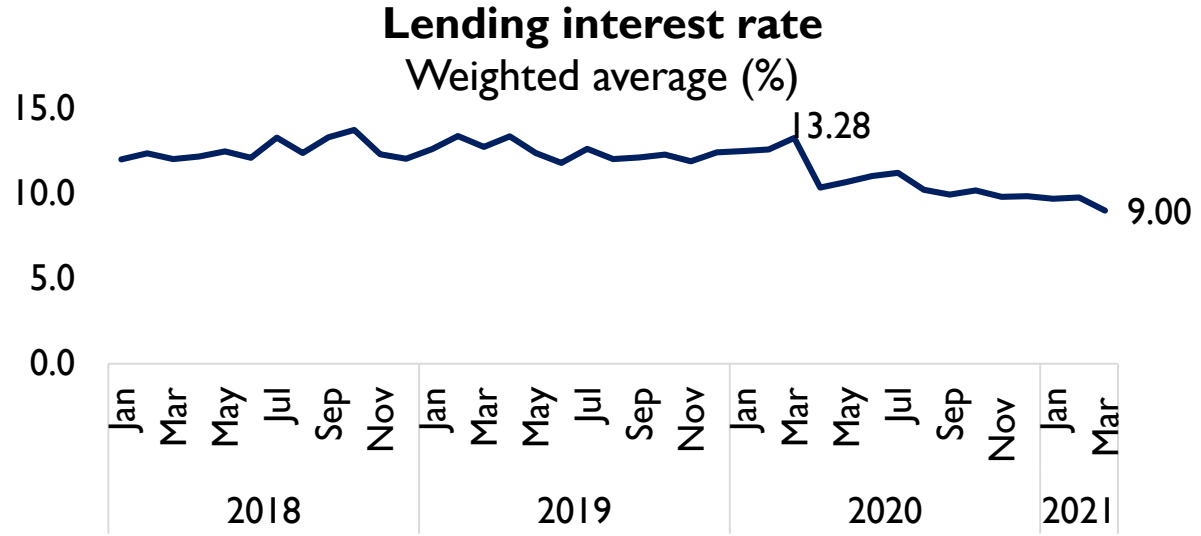


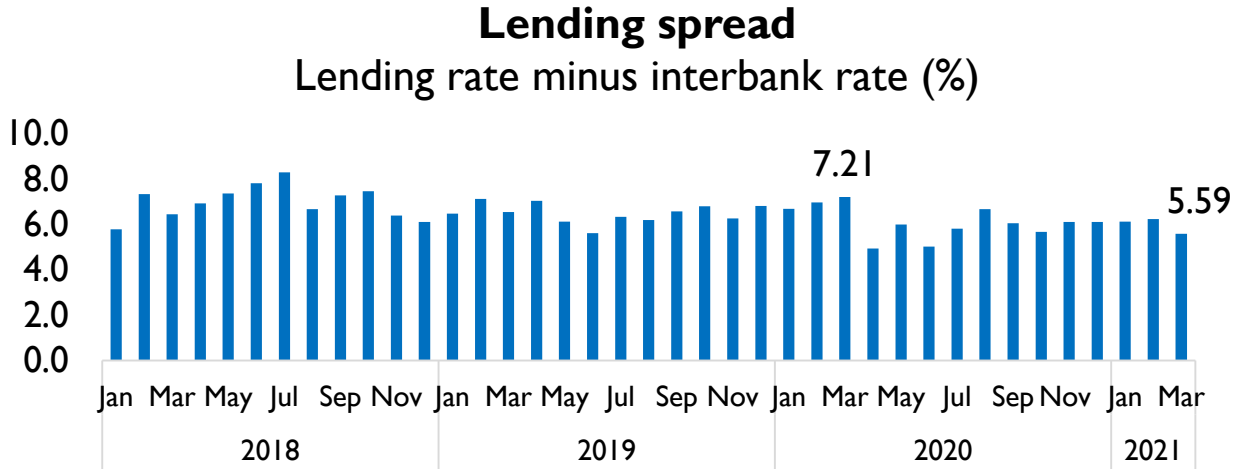
Monetary Conditions Index

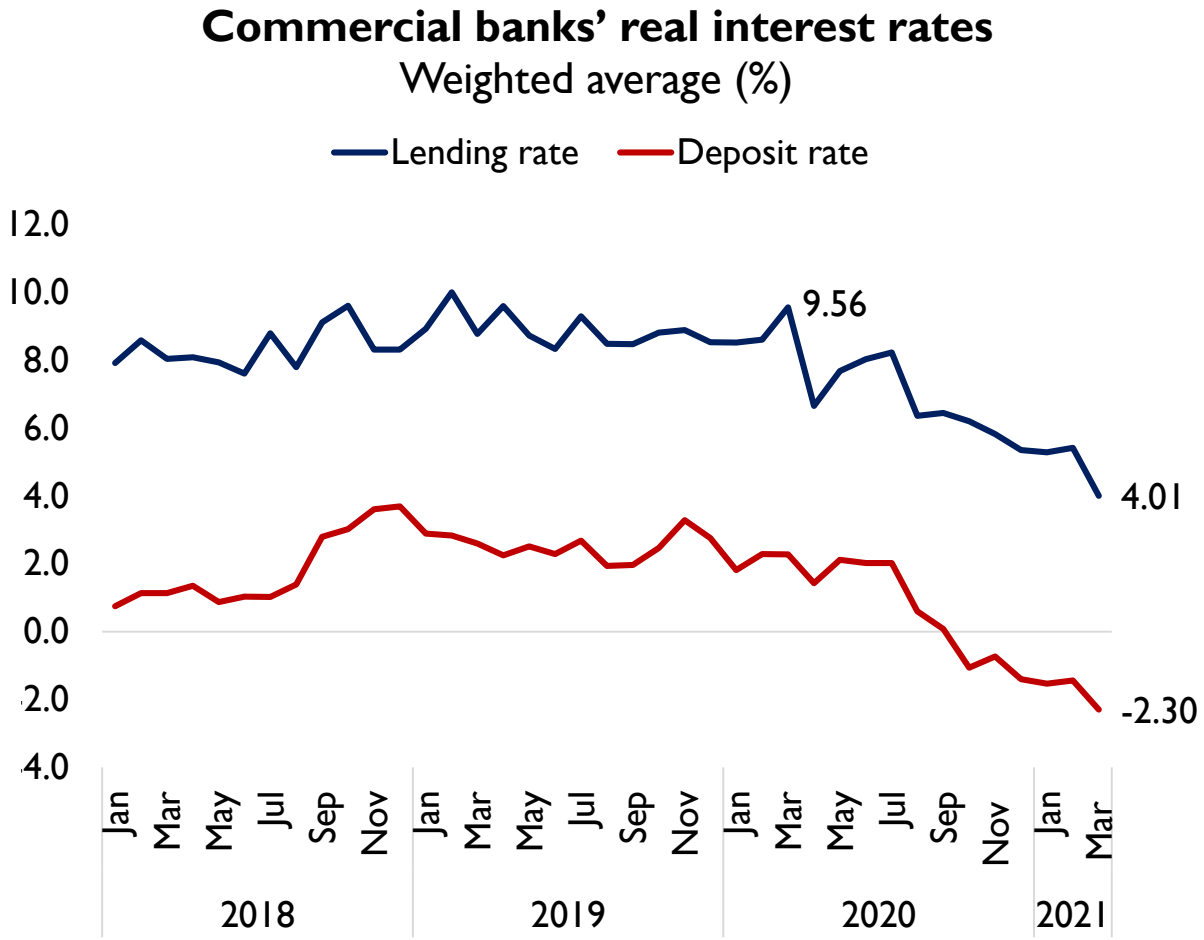


Fuente: CBDR

In this context, market interest rates fell as well as the lending spread, with a higher impact than on episodes of exclusively conventional MP…

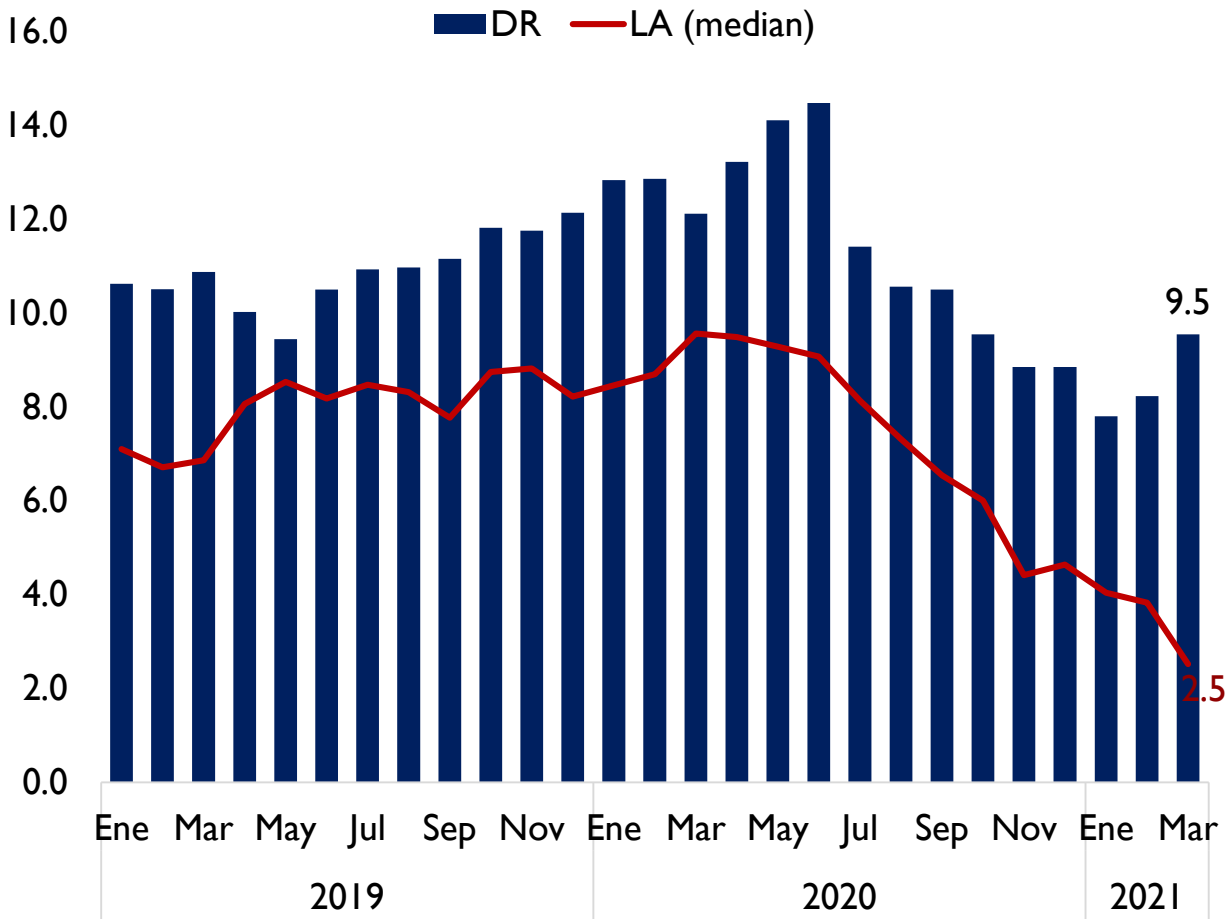




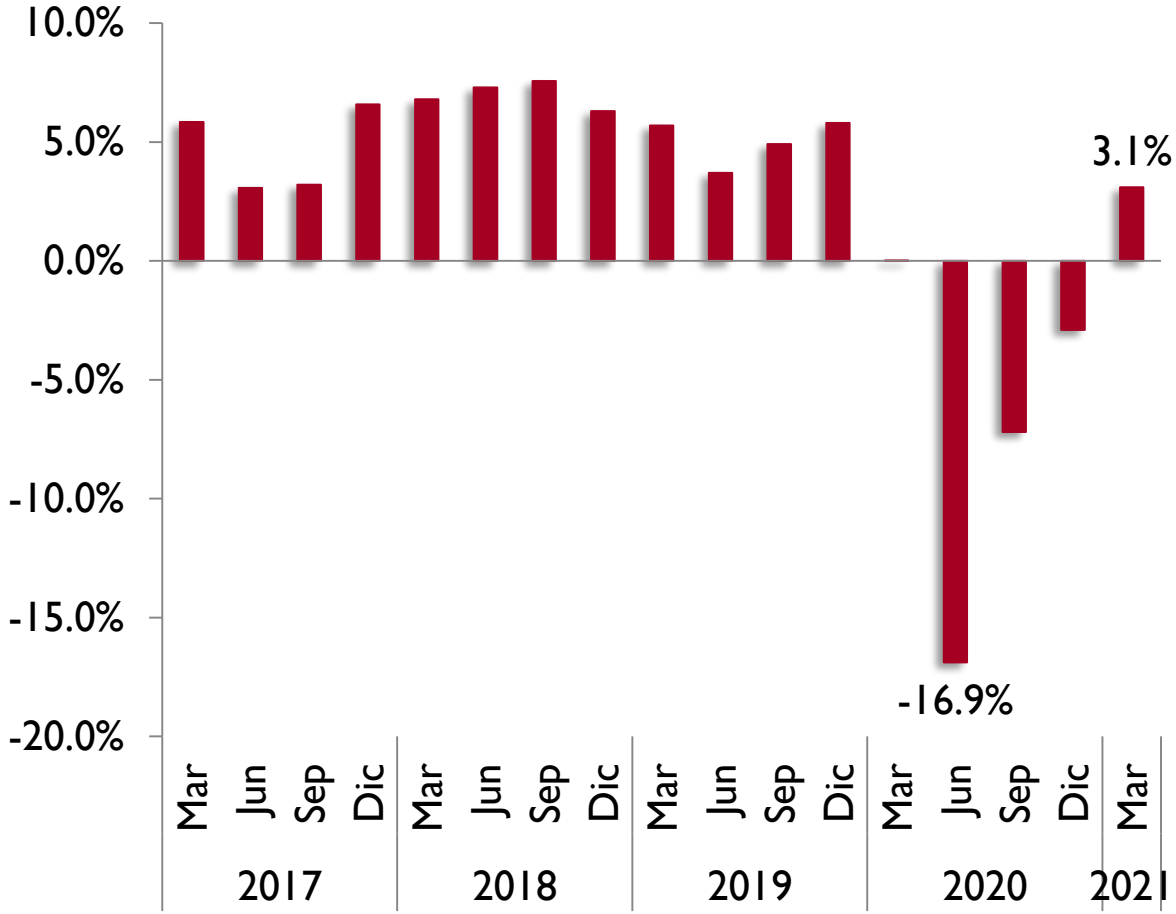


Supported by the stimulus measures, credit to the private sector continues to grow at high rates and the economic activity has shown signs of a strong recovery…

Loans to private sector in local currency
Y-o-y(%)



GDP growth
Y-o-y (%)



Empirical strategy

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Empirical Strategy: the model

- The effects of the monetary policy response by the CBDR are analyzed using a New Keynesian semi-structural model, where the equations are log-linearized representations of the steady state conditions.

- These type of models are widely used for policy analysis:
  - For example, Berg et al (2006) present the basic four equation structure (IS curve, Phillips curve, Taylor rule and UIP).

- Parting from this basic set up, CBs have adapted this strategy to adequately capture the characteristics of their economies .
  - The main model for forecast and policy analysis in the DR is one example (see Hamman (2015); Checo & Ramírez (2017)).

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The baseline model

Taylor Rule:

$$i_t^{mpr} = \theta_i i_{t-1}^{mpr} + (1-\theta_i)\left(\bar{\imath} + \theta_\pi(E_t\pi_{t+1} - \bar{\pi}) + \theta_{\hat{y}}\hat{y}_t\right) + \eta_t^{mpr}$$

IS Curve:

$$\hat{y}_t = \beta_1\hat{y}_{t-1} + \beta_2 E_t\hat{y}_{t+1} - \beta_3\hat{r}_t + \beta_4\hat{z}_t + \beta_5\hat{y}_t^* + \eta_t^{\hat{y}}$$

Phillips Curve:

$$\pi_t = \alpha_1\pi_{t-1} + \alpha_2 E_t\pi_{t+1} + \alpha_3\hat{y}_t + \alpha_4\hat{z}_t + \alpha_5\widehat{oil}_t + \eta_t^{\pi}$$

Uncovered Interest Parity condition (UIP):

$$i_t^{mpr} = i_t^* + \Delta E_t S_{t+1} + \rho_t + \eta_t^{uip}$$

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The model: the monetary policy

- In this baseline model, the monetary policy is restricted to the conventional instrument: the monetary policy rate.

- However, in response to COVID-19, the CBDR implemented several unconventional measures on top of the interest rate reduction.

- To capture the possible effects of these policies, we propose the introduction of a financial block to the baseline model.

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The model: the financial block

- Several authors have introduced such financial block to semi-structural models, although mainly focused on macroprudential analysis.

- For instance, Sámano (2011) introduces financial considerations into a semi-structural model for the Mexican economy to evaluate if a combined Taylor rule with a CAR rule could provide a more effective macroeconomic outcome.

- However, our main objective is more aligned with the interaction between the financial and macroeconomic blocks through the effect that credit expansions have over the aggregate demand.

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The model: the financial block

- Given this, we follow an approach similar to Arroyo et al (2021), who introduce a financial block in the baseline forecast and policy analysis model for the Chilean economy and allow the interaction of some financial variables with the aggregate demand.

- In this way, one could capture the effect of unconventional monetary policies that directly affect credit and contributes to aggregate demand.

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The model: the financial block

- There is a spread between the MPR and the loan rate on commercial loans:

$$spread_t = i_t^{loan} - i_t^{mpr}$$

- Loan rate is affected by the MPR, but also other "costs":

$$i_t^{loan} = \varphi_1 i_t^{mpr} + \varphi_2 Prov_t - \varphi_3 LF_t + \varepsilon_t^{i^{loan}}$$

Where:
LF_t: liquidity facilities (disbursement of all facilities in domestic currency)

- Credit demand is procyclical:

$$\widehat{cr_t} = \alpha_1 \widehat{cr}_{t-1} + \alpha_2 \, \hat{y}_t \, - \alpha_3 spread_t + \varepsilon_t^{cr}$$

- Provision expenses react to expected risks (macro and financial):

$$Prov_t = \delta_1 Prov_{t-1} - \delta_2 \left(\frac{\sum_{i=1}^{4} \hat{y}_{t+1}}{4} \right) + \delta_3 \widehat{cr}_{t-1} + \varepsilon_t^{prov}$$

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The new macro block

Taylor Rule:

$$i_t^{mpr} = \theta_i i_{t-1}^{mpr} + (1-\theta_i)\left(\bar{\imath} + \theta_\pi(E_t\pi_{t+1} - \bar{\pi}) + \theta_{\hat{y}}\hat{y}_t\right) + \eta_t^{mpr}$$

IS Curve:

$$\hat{y}_t = \beta_1\hat{y}_{t-1} + \beta_2 E_t\hat{y}_{t+1} - \beta_3\hat{r}_t + \beta_4\hat{z}_t + \beta_5\hat{y}_t^* + \beta_6\widehat{cr}_t + \eta_t^{\hat{y}}$$

Phillips Curve:

$$\pi_t = \alpha_1\pi_{t-1} + \alpha_2 E_t\pi_{t+1} + \alpha_3\hat{y}_t + \alpha_4\hat{z}_t + \alpha_5\widehat{oil}_t + \eta_t^{\pi}$$

Uncovered Interest Parity condition (UIP):

$$i_t^{mpr} = i_t^* + \Delta E_t S_{t+1} + \rho_t + \eta_t^{uip}$$

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Estimation

- The parameters of the model are jointly estimated by bayesian methods, using quarterly data from 2006 through 2019.

- The priors of the macro block follow evidence for the DR (Hamman (2015); Checo & Ramírez (2017)) while the financial block is initialized following Arroyo et al (2021).

- As observable domestic variables, we use the interbank rate, loan rate, output gap, inflation, nominal exchange rate depreciation, growth of credit to the private sector, disbursement of all facilities in domestic currency as % of GDP, provisions as % of total credit and Dominican Republic's EMBI.

- For the foreign variables we use USA output gap, inflation and interest rate, as well as the WTI oil price.

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Estimation

- With the estimated parameters, we produce impulse response functions to represent the effects and transmission mechanisms of the analyzed policy shocks.

- Furthermore, we compute the historical shock decomposition for the loan rate, credit growth and output gap, to capture the contributions of the policies in these variables.

- In particular, we will concentrate on these contributions during the recent COVID-19 episode.

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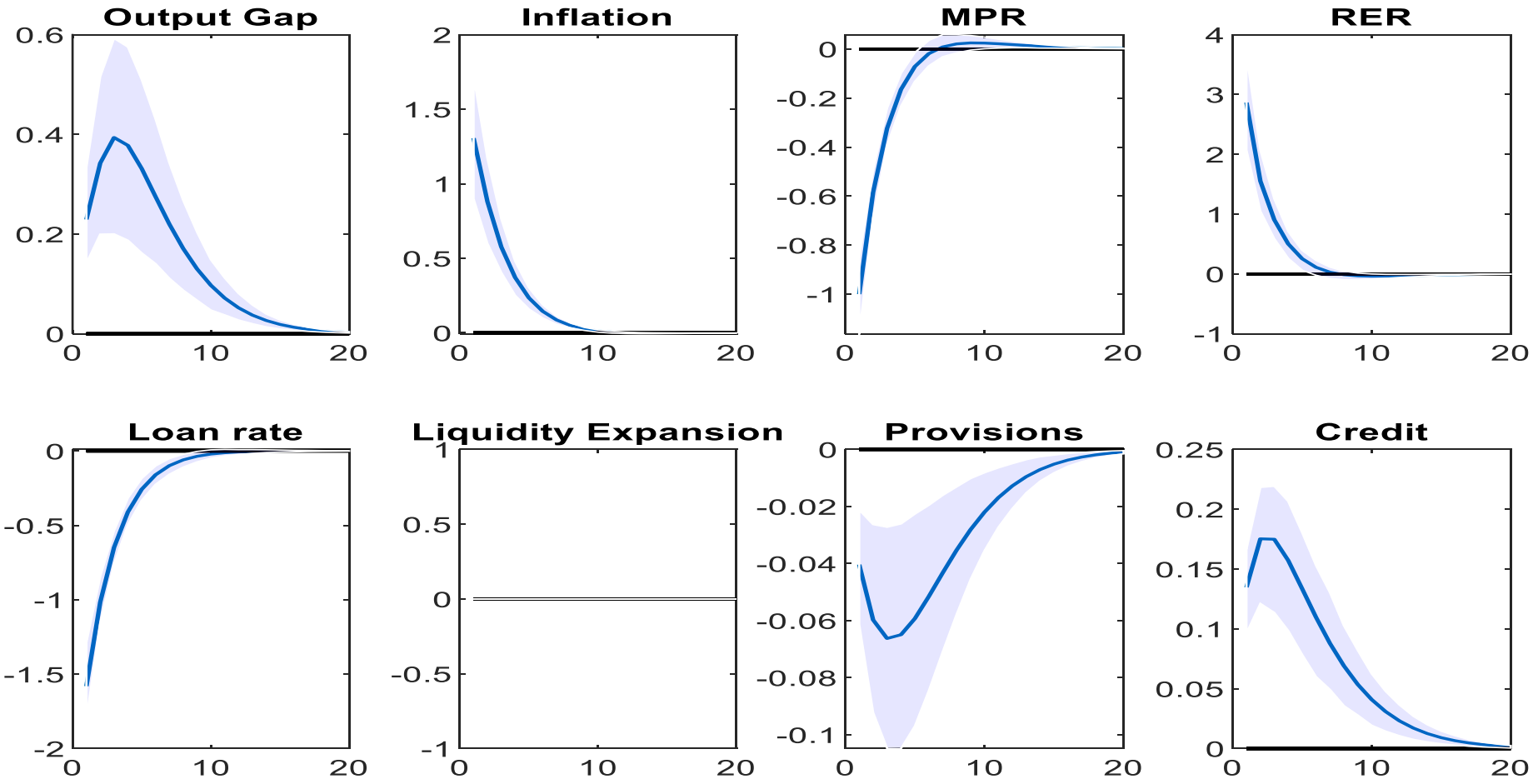
IRF: 1% Expansionary MPR shock



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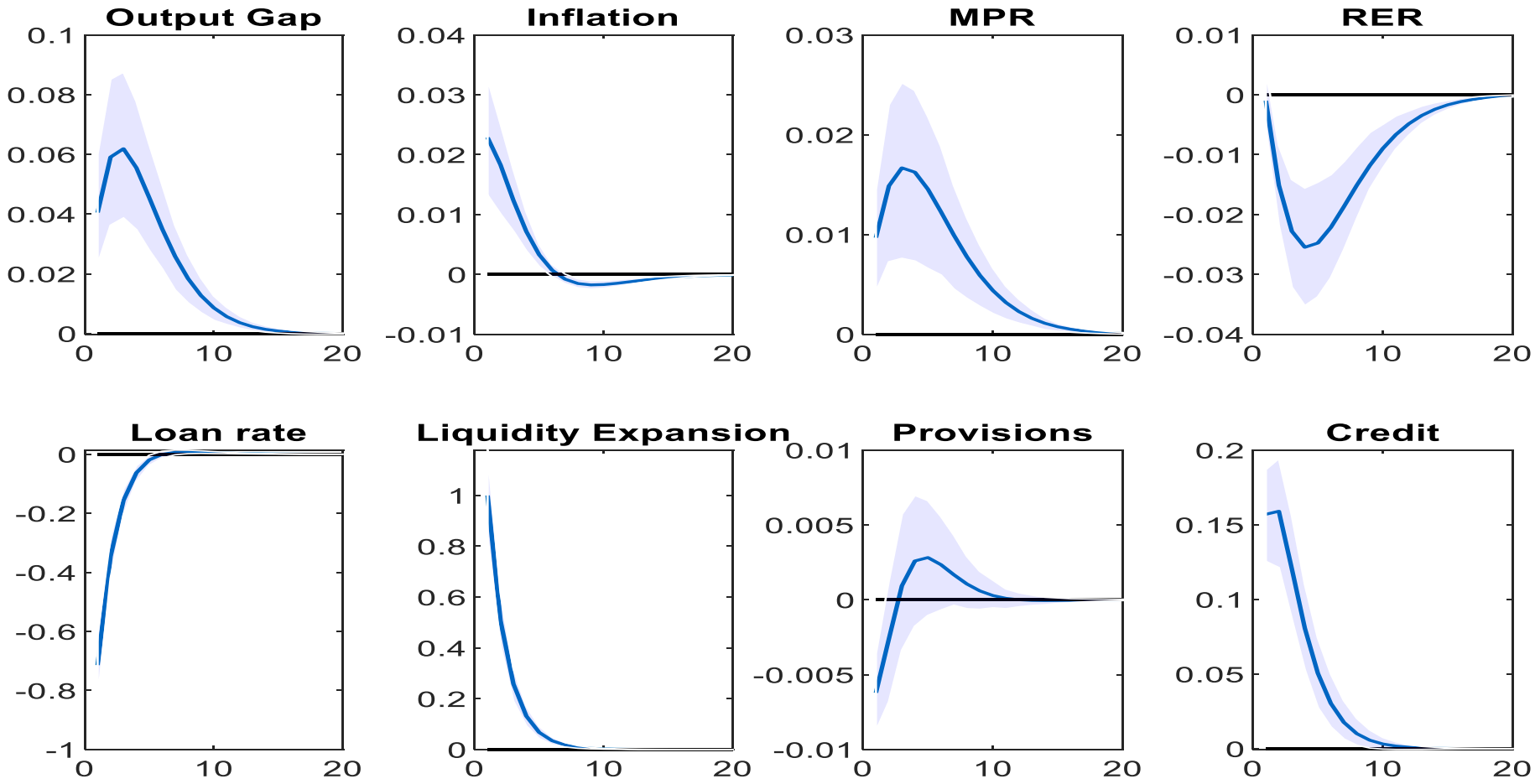
IRF: 1% Liquidity Expansion shock



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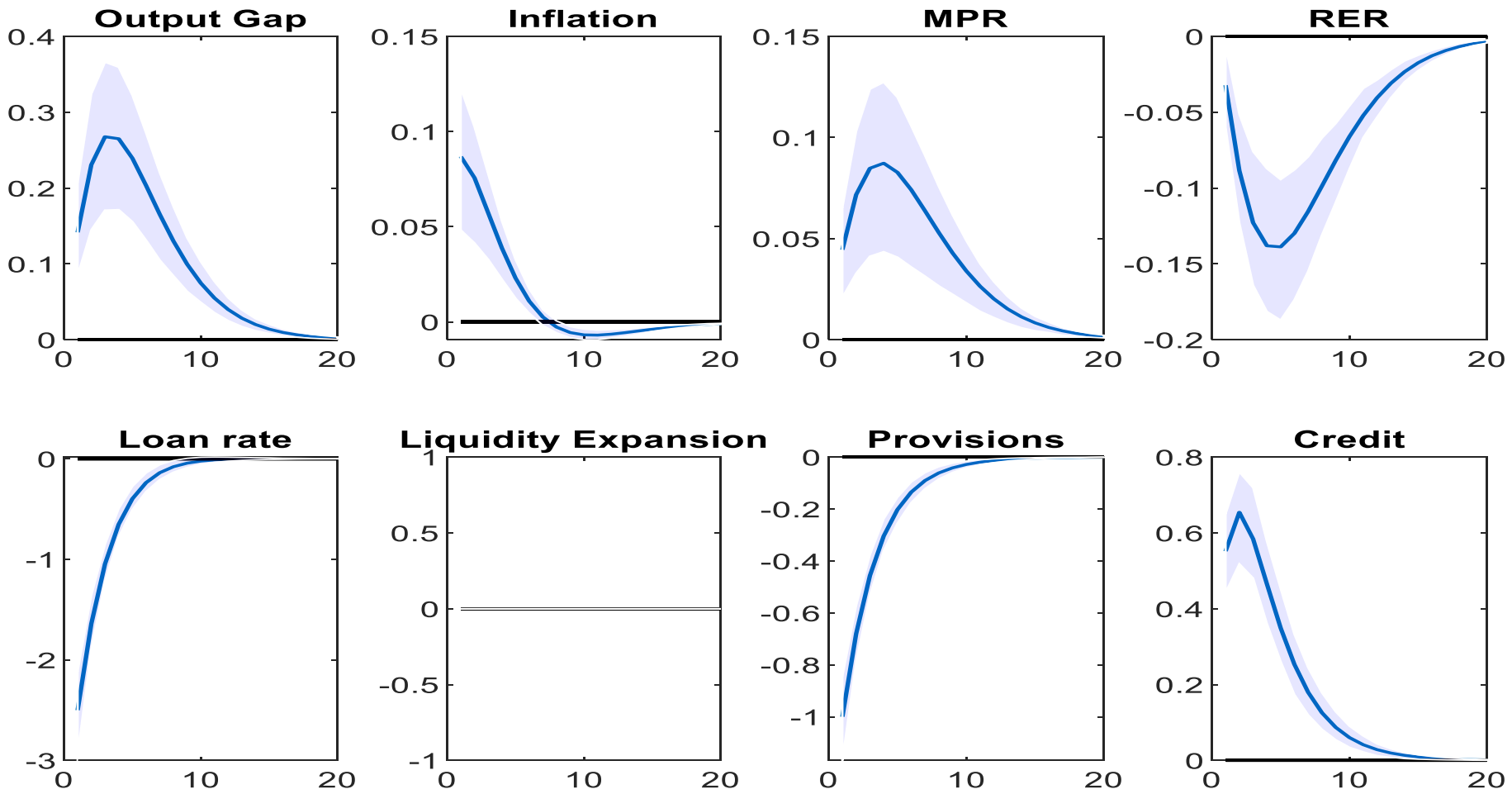
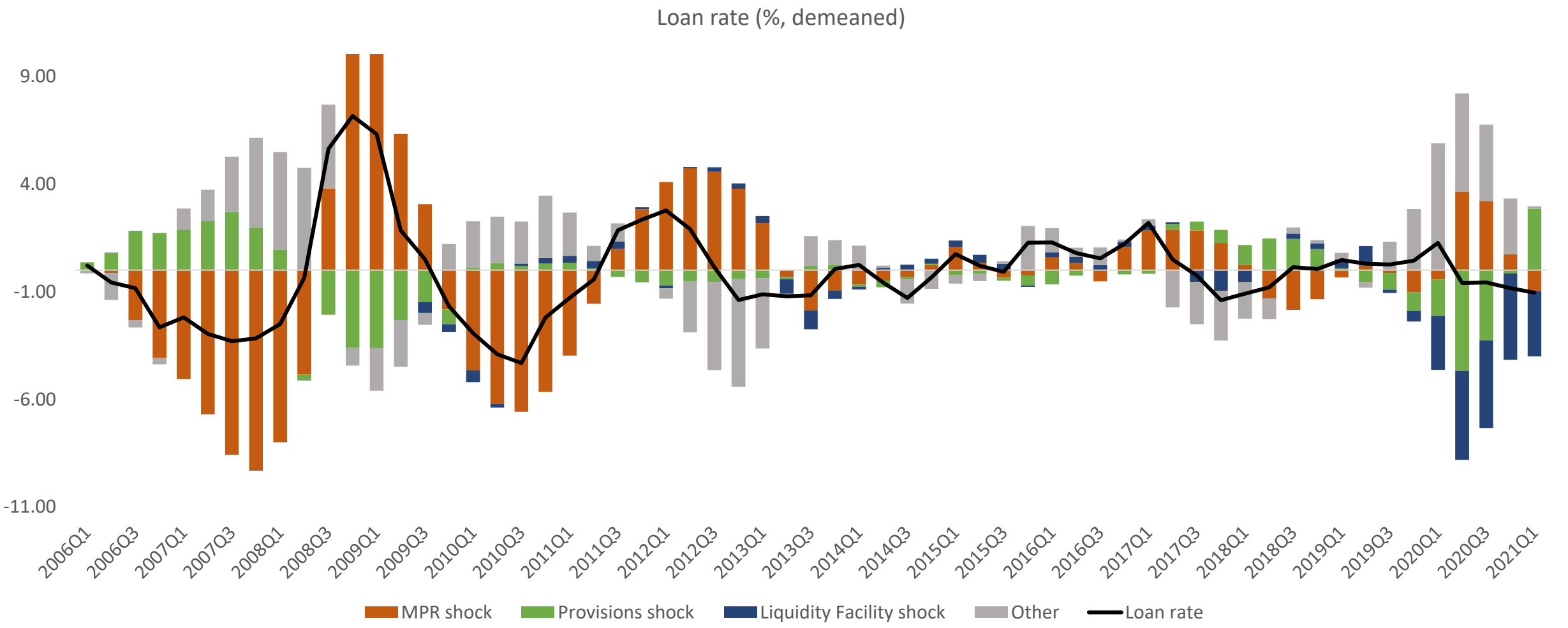
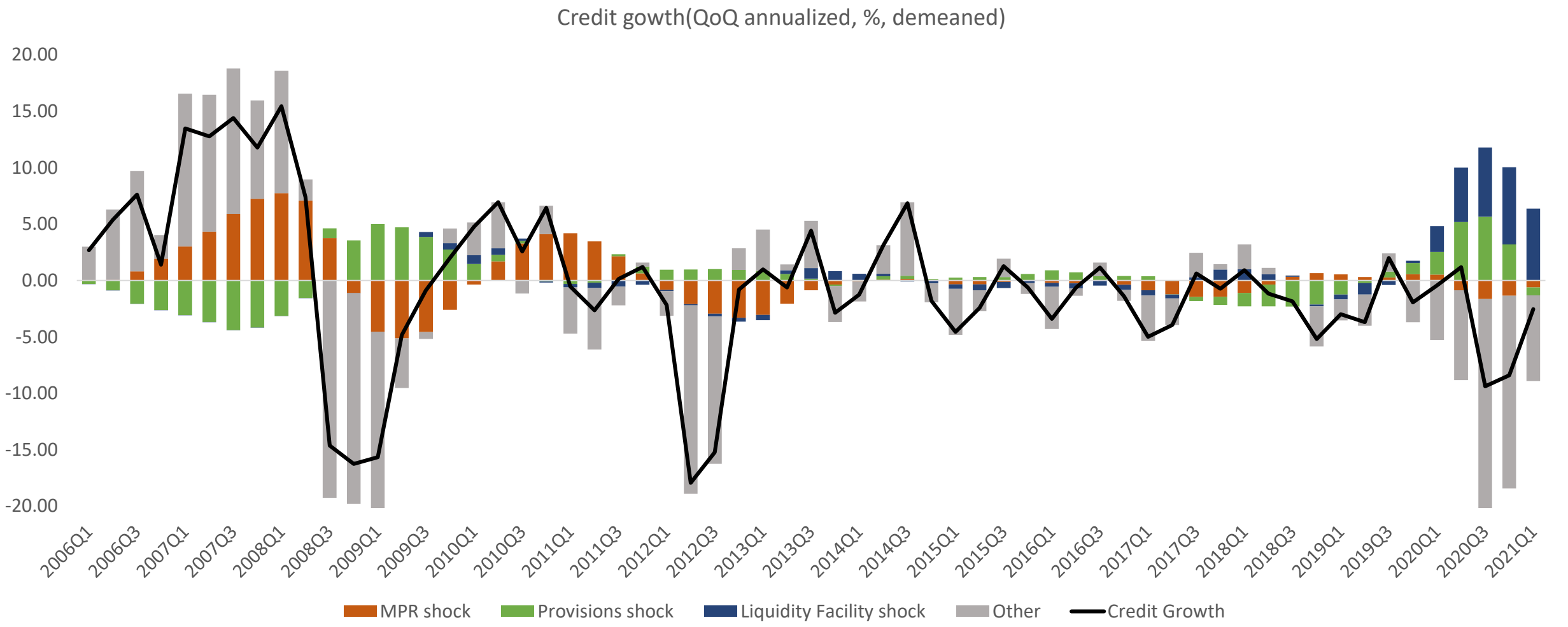
IRF: 1% Expansionary (reduction) Provisions shock



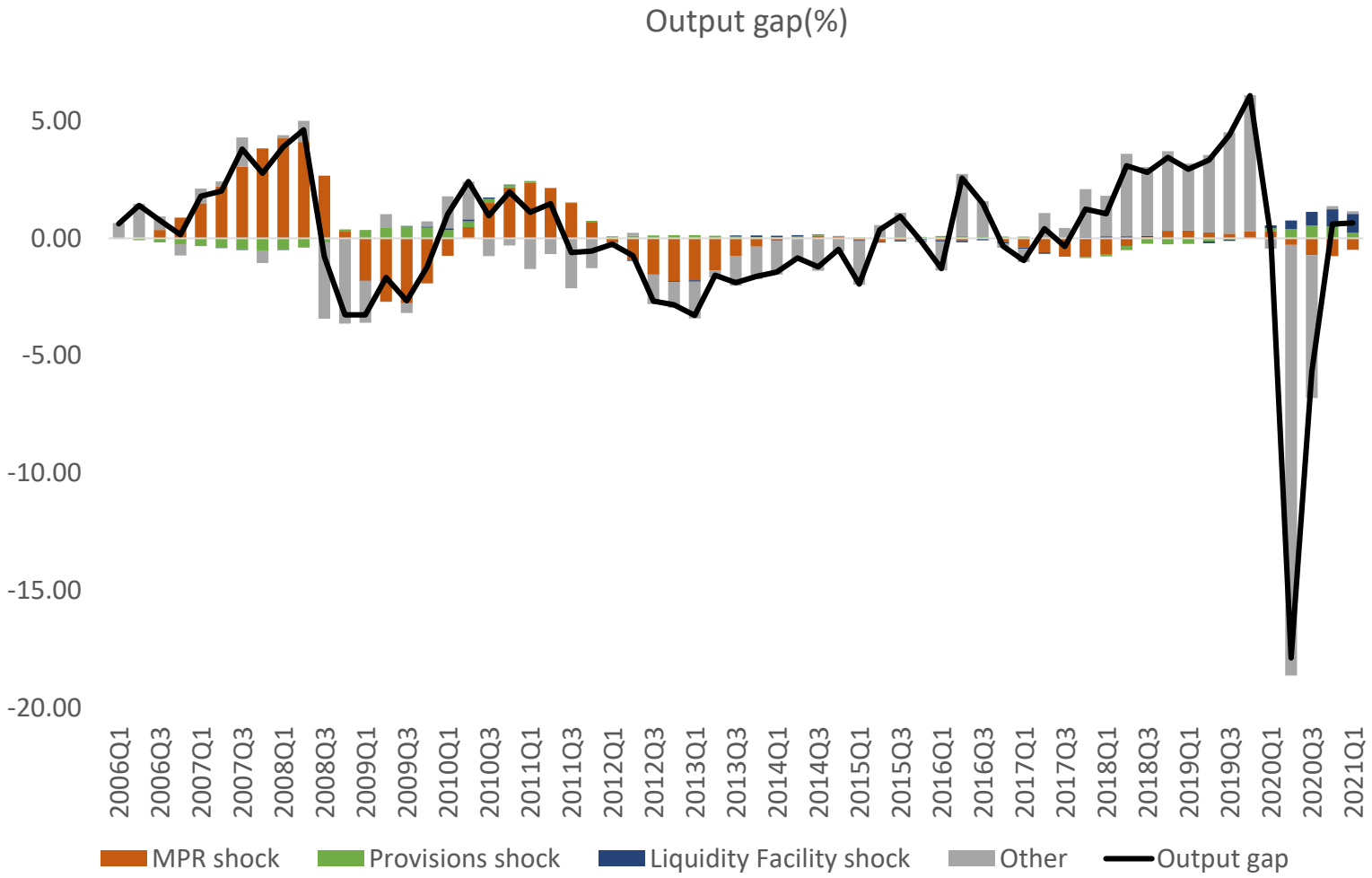
Historical Decomposition: Loan rate

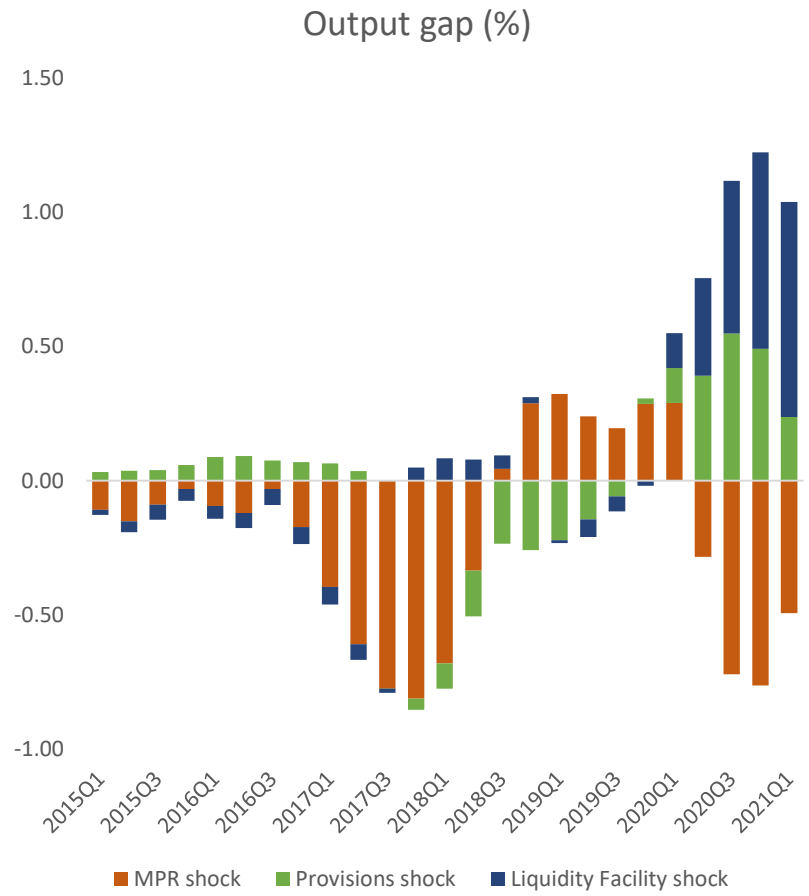


Historical Decomposition: Credit Growth



Historical Decomposition: Output Gap





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Preliminary concluding remarks

- In response of the COVID-19, in addition to the monetary policy rate the CBDR reacted with a wide range of tools to provide liquidity to the financial system

- These type of policies impact credit growth and aggregate demand, thus providing extra tools to counter negative shocks.

- In particular, the special measures taken reduced financial costs and lowered market interest rates, providing a positive impulse to credit growth and aggregate demand.

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