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## **How to absorb excess liquidity in the banking sector?**

Cyrus de la Rubia, Ricardo Giucci, Woldemar Walter

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### **German Economic Team Moldova (GET Moldova)**

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

[info@get-moldau.de](mailto:info@get-moldau.de)

[www.get-moldau.de](http://www.get-moldau.de)

## How to absorb excess liquidity in the banking sector?

### Executive Summary

After the bankruptcy of three banks in November 2014, a confidence crisis threatened the financial stability in Moldova. To avoid a collapse of the banking sector the National Bank of Moldova (NBM) provided emergency loans worth MDL 13.5 bn to the banking sector, granted over the following months and assuring people that their deposits were safe. At the same time, the NBM intervened heavily in the foreign exchange market to stabilize the exchange rate, when people started to shift their deposits from Lei to foreign currencies. As a result of these developments, excess liquidity came to the market, which called for an unusual voluminous use of instruments by the NBM to absorb liquidity. Based on historical data, one would expect the NBM to absorb ca. MDL 10 bn. However, the NBM is currently absorbing roughly MDL 16 bn. Thus, we estimate the amount of excess liquidity at MDL 6 bn.

In order to absorb this excess liquidity, the NBM currently uses mainly two instruments: reserve requirements and selling of own certificates. The ratio for reserve requirements has been increased seven times and now amounts to 37% for Lei deposits. In such a way, an amount of MDL 10.5 bn is being absorbed. Apart from that, the NBM issues twice a week own certificates with a maturity of two weeks and an interest rate of 9% pa. Currently, MDL 5.8 bn of liquidity is absorbed using certificates. However, the unusual intensive use of these absorption instruments, especially the use of the rather expensive certificates, is a high financial burden for the NBM, endangering its own capital.

In 2016, the net cash flow out of interest payments and receipts as well as costs for personnel and suppliers was at MDL -494 m. This situation is unlikely to improve much in 2017. According to our own rough estimate, a continuation of the current absorption policy would imply a yearly loss of around MDL 160 m. Thus, the absorption measures endanger the autonomy and credibility of the NBM and there is a need to find a sustainable solution.

In our view, such a solution must fulfil the following three criteria:

- i. Absorption of sufficient liquidity
- ii. Reasonable cost for the NBM, in order to avoid a negative financial result and/or own capital becoming negative
- iii. No competition between the NBM and the Ministry of Finance on the money market, i.e. the debt market with short maturities

The NBM should try to find a solution by its own means, i.e. without the participation of the government. If this is not feasible, because the involved cost would render own capital negative, then a solution involving the government is needed. Thus, we distinguish two sets of recommendations.

**Solution involving only the NBM.** Based on the three criteria mentioned above, we recommend the use of two main instruments. First, reserve requirements should continue to play a key role, as this is the case in many emerging markets. However, in order to reduce the cost for the NBM, the effective interest rate paid to banks should be considerably reduced. A reduction of the effective interest rate by one percentage point would mean a reduction of NBM's yearly expenses of MDL 104 m. In order to avoid unwanted reactions from banks and depositors, the reduction should take place in a gradual and controlled manner. Second, the NBM should sell government bonds it holds on its balance. If only the historical stock of government bonds would be used, the absorption would amount to MDL 2.3 bn. In addition, part of the Law 235 bonds could be used. In the segment of one to four year maturity these bonds amount to almost MDL 1 bn. While these instruments alone are not enough to solve the problem and would certainly involve losses, it would absorb liquidity on a permanent basis, which is a very positive feature.

**Solution involving the NBM and the government.** If the “NBM-only” solution is financially not feasible, a different approach is needed. Reserve requirements should be used in the same way as described above, but instead of selling government bonds by the NBM, the Ministry of Finance (“MinFin”) should issue bonds and keep the raised funds at the NBM on a frozen account, to which the MinFin has no access. In such a way, liquidity can be withdrawn from the market and a direct competition between the NBM and MinFin is avoided. However, in order to reduce the cost for the NBM, part of the interest burden (e.g. 50%) should be paid by MinFin. The way this instrument is used today in Moldova, only the NBM pays the interests amounting to 6% pa, thus increasing costs and worsening the financial situation of the central bank.

Since the proposed solution involves not only the NBM, but also MinFin, we further recommend that this sustainable solution should be discussed at the National Council of Financial Stability (NCFS). In case of a risk of own capital of the NBM becoming negative, it is the responsibility of all relevant institutions to find a suitable solution to the problem, in a cooperative manner. In case the MinFin does not cooperate with the NBM on this issue, then the NBM could make losses, with the need for MinFin to recapitalise the bank. This would cost money, but most importantly have a very negative impact on the image of the NBM and on depositors, who still feel unsecure due to the bank fraud in 2014. Alternatively, the NBM would have to compete with the MinFin on maturities of e.g. 3 months, which in our view should be avoided. Thus, a cooperative solution is in the interest of all participants.

#### **Authors**

Dr Cyrus de la Rubia	cyrus.delarubia@yahoo.de	
Dr Ricardo Giucci	giucci@berlin-economics.com	+49 30 / 20 61 34 64 - 0
Woldemar Walter	walter@berlin-economics.com	+49 30 / 20 61 34 64 - 51

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## 1 Introduction

The Moldovan financial market is awash with liquidity and the NBM is busy absorbing base money to get control over interest rates and the foreign exchange rate. The excess liquidity is the result of the banking crisis and the provision of liquidity especially to those three banks, which were later on liquidated due to a fraud involving around USD 1 bn. Due to the liquidity provision, these banks were enabled to make the payouts to their clients, thereby avoiding a spread of the banking run to the whole banking sector. The banking scandal together with the massive injections of liquidity led to a sharp depreciation, reaching up to 30% against the US dollar. The central bank had to act, to get back control over the currency and to stop the jump in dollarisation, as more and more private households and companies switched from Lei to FX-deposits. Three measures were actually taken: Interventions in the foreign exchange market, a hike of the base rate to up to 19.5% and a hike of the reserve requirement to 35% (now at even 37%). These actions were successful in the sense that the exchange rate stabilised and inflation came down significantly. This stabilisation was further supported by an agreement with the IMF in October 2016, leading to new loans not only from the IMF, but also from the World Bank as well as the Romanian government and the EU.

As a result of this development, the NBM needs to absorb much more liquidity than under normal circumstances. In combination with relatively high interest rates, this means a high financial burden for the central bank. The longer the NBM has to bear this burden, the more its own capital is put at risk and therefore the autonomy of the NBM. This could prove to be dangerous, especially in the context of an inflation targeting regime.<sup>1</sup> To forego an absorption policy is not an option, as the high liquidity would risk a renewed depreciation, a new wave of dollarisation and a spike in inflation.

This is the context in which the central bank is looking for adequate monetary instruments and measures, which could normalise the liquidity situation, without damaging its reputation and autonomy. In part 2 of this paper we show how the liquidity situation evolved during the banking crisis and afterwards. In this respect we quantify the amount of excess liquidity in the market. In part 3 we analyse the current costs of the instruments that are used by the NBM, to get an idea how urgent it is to solve the liquidity problem. Part 4 discusses the toolbox the NBM could use to absorb base money from the market, taking into account the costs of the corresponding instruments and their effectiveness. Finally, in part 5 we make recommendations regarding the use of instruments, if the central bank were to act alone or together with MinFin.

## 2 The excess liquidity situation and the reasons for this situation

We define liquidity as the Lei base money: the sum of the currency in circulation (cash), bank reserves (required and other) as well as overnight deposits of commercial banks (playing a minor role). We add to this the money that is absorbed through certificates (which are a substitute of liquidity given their maturity of only two weeks). Thus, we reach to Lei base money + certificates.

Taking this definition, the base money incl. certificates currently amounts to MDL 35.9 bn and the NBM absorbs MDL 16.3 bn or 45% of it. Historically the absorption rate was at 30%. Taking 30% absorption rate as a benchmark, this would mean that currently some MDL 6 bn is absorbed in addition to the usual absorption. We define this amount as excess liquidity. This is an additional burden for the NBM, who is only able to absorb this amount by making interest payments to banks.

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<sup>1</sup> While a central bank is theoretically able to fulfill its monetary policy even with negative capital, not being able to transfer some profit to the government or even asking the Ministry of Finance for recapitalisation puts the central bank in a defensive situation, which does not bode well for the autonomy needed to fulfill its mandate of a stable price environment.

**Figure 1**

MDL base money absorbed in percent of MDL base money incl. certificates



Source: National Bank of Moldova

Before analysing this issue, we describe the reasons why this development took place, shown also in Figures 2 to 4 below.

The banking crisis started by the end of 2014, when it became clear that three banks (Banca de Economii, Banca Socială and Unibank) had transferred in a fraudulent transaction USD 1 bn abroad. As a first reaction, people shifted their deposits from Lei to foreign currency deposits. However, at the beginning of 2015 people started also to withdraw foreign currency deposits, as there was the fear that the banks in question may go bankrupt without any compensation for their clients. As a result, the Lei depreciated from October 2014 to December 2015 by 25% against the US dollar.

The NBM reacted immediately: It intervened in the foreign exchange market selling from October 2014 to July 2015 reserves of some USD 900 m, affecting Lei base money negatively. Simultaneously NBM injected Lei base money into the banking sector (in Figure 3: claims on banks) to make sure that the withdrawal of deposits could be met by the banks. As a result, Lei base money shrank only until April 2015. Afterwards Lei base money increased as the central bank's foreign exchange interventions came actually to a halt, while the Lei liquidity injections for banks went on.

To stop the depletion of foreign exchange reserves and support the currency, the NBM started to increase the Lei reserve requirement ratio -which was at 14% at the beginning of 2015- to 35% by October 2015.<sup>2</sup> Another complementary interpretation is that the NBM took this measure to absorb excess liquidity, which was about to put in danger the stability of the national currency.<sup>3</sup> In addition the NBM increased the base rate from 3.5% in October 2014 to 19.5% one year later.

<sup>2</sup> The reserve requirement ratio of foreign currency deposits was left unchanged at 14%. This had to do with the wish to attract capital inflows. However, in the long run the fact that the reserve requirement for foreign currency deposits is lower than for MDL deposits runs against the goal to diminish dollarisation.

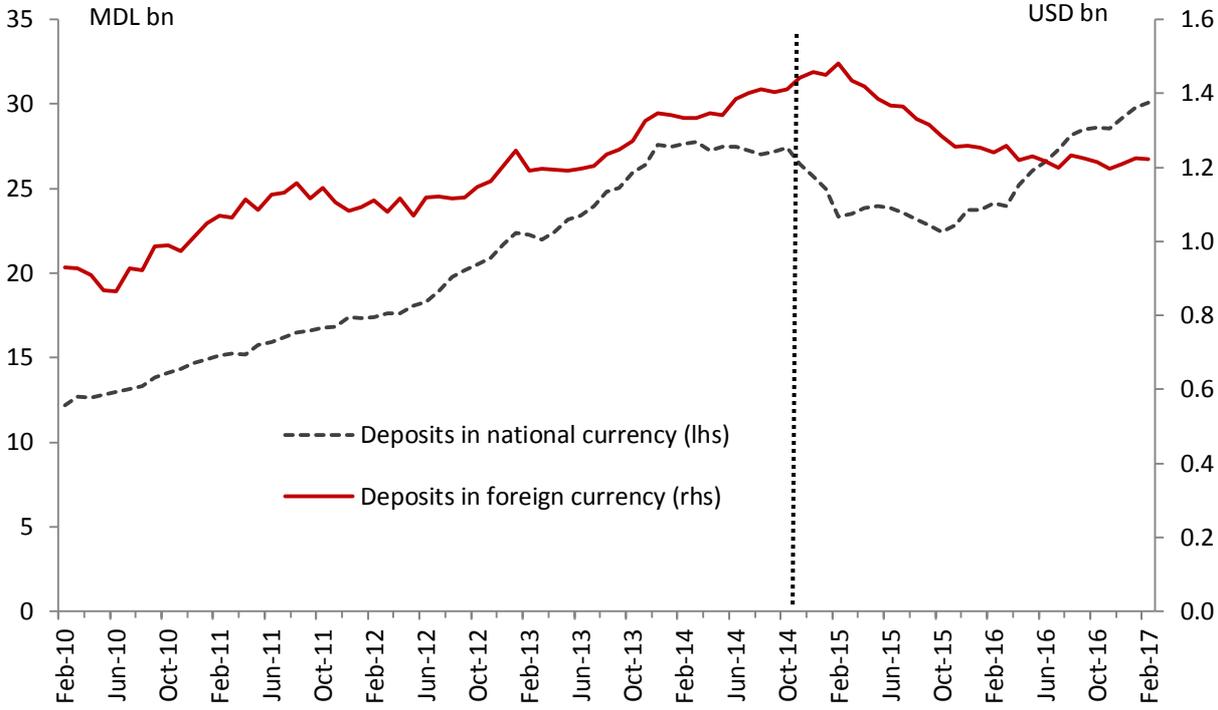
<sup>3</sup> With the increase of the reserve requirement ratio the NBM automatically increased the demand of banks for base money. Thereby the NBM compensated with this measure the decrease in demand for base money as MDL deposits were withdrawn and exchanged in foreign currency.

At the beginning of 2016 the NBM started to purchase foreign currency to build up the reserves again. While claims on banks went somewhat down (which is equivalent to an absorption of Lei base money), the purchases of foreign currency led to an increase of Lei base money in the economy. On a net basis, the Lei base money increased. By the end of 2016 the NBM's worthless claims on banks were swapped against claims on the government.

Even though the reserve requirement ratio was already at 35%, there was still too much liquidity. Actually, new liquidity came into the market due to continued purchases of foreign currency by the NBM to build up reserves; a necessary step to reverse the loss of FX reserves at the start of the crisis. The NBM was reluctant to absorb the additional base money through a further increase of the reserve requirement ratio. Instead, the absorption took place through NBM certificates.

**Figure 2**

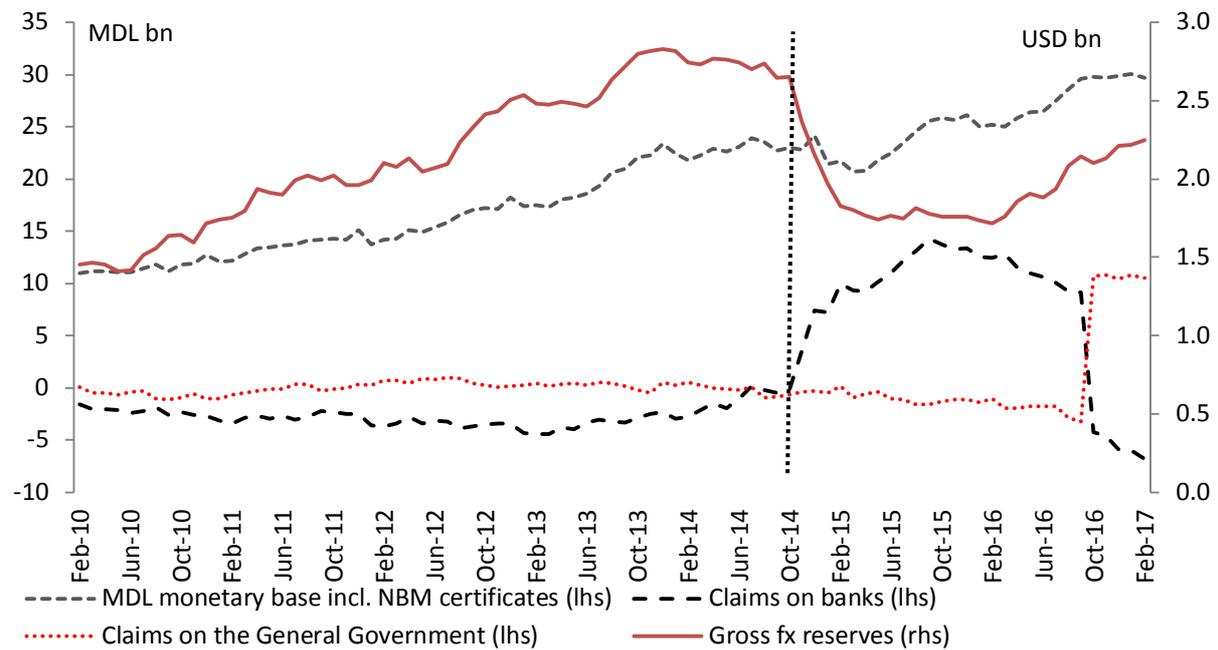
Deposits in national currency and foreign currency, MDL/USD



Source: National Bank of Moldova

**Figure 3**

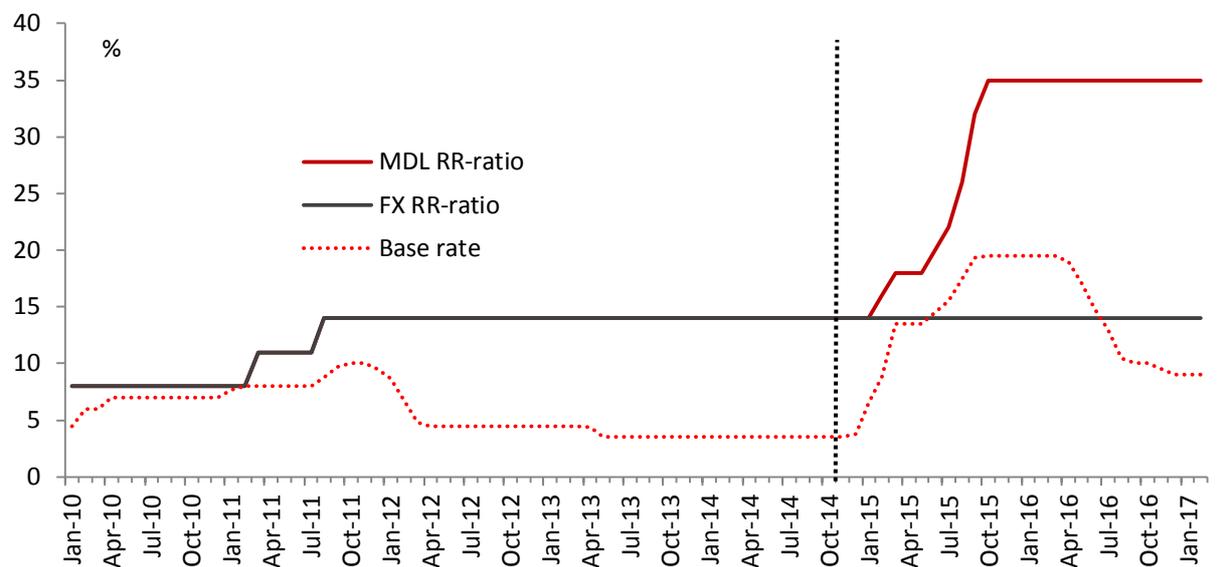
FX reserves, MDL monetary base, NBM's claims on banks and NBM's claims on government



Source: National Bank of Moldova

**Figure 4**

Reserve requirement ratio for MDL deposits and FX deposits, base rate



Source: National Bank of Moldova

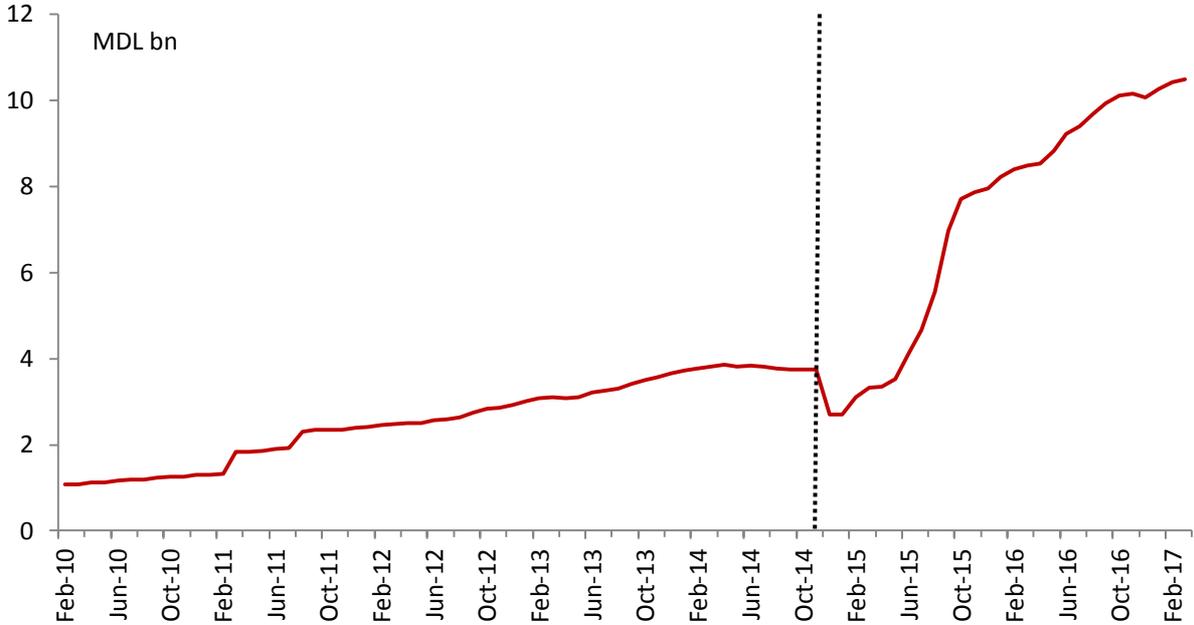
**Conclusion:** Due to a combination of the granting of loans to the banking sector and a lower demand for Lei base money, excess liquidity built up in the market, which we estimate at around MDL 6 bn. To stabilise the situation the NBM intervened in the FX market, granted loans to the banking sector and increased the reserve requirement ratio massively. When the situation calmed down, the NBM started to build up FX reserves again, creating base money, which is sterilized by central bank certificates. These certificates are, however, highly liquid assets which do not solve the liquidity problem, but are a heavy financial burden for the NBM.

### 3 The current costs of absorbing liquidity

Before analysing which instruments to absorb liquidity are available to the central bank, we take a look at the costs of the instruments that are currently used to withdraw base money from the market. The rationale behind this question is that if the instruments used are too expensive in the sense that the NBM generates losses, the NBM could lose its autonomy, as it would become dependent on the government, who would provide new capital to the NBM.

Currently the central bank uses two main instruments to absorb liquidity. The main instrument is the reserve requirement. In addition, the central bank offers twice a week certificates with a maturity of two weeks. The reserve requirement absorbs currently some MDL 10.5 bn of base money (March 2017). While the reserve requirement ratio is at 37%, only 32% are remunerated at a rate of 6%. This means that the effective interest rate is at ca. 5.2%  $[(32/37)*6\% = 5.189\%]$ . Assuming the NBM absorbs this amount of base money over a period of one year, the central bank has to make payments to the banking sector of MDL 545 m per year.

**Figure 5**  
MDL required reserves



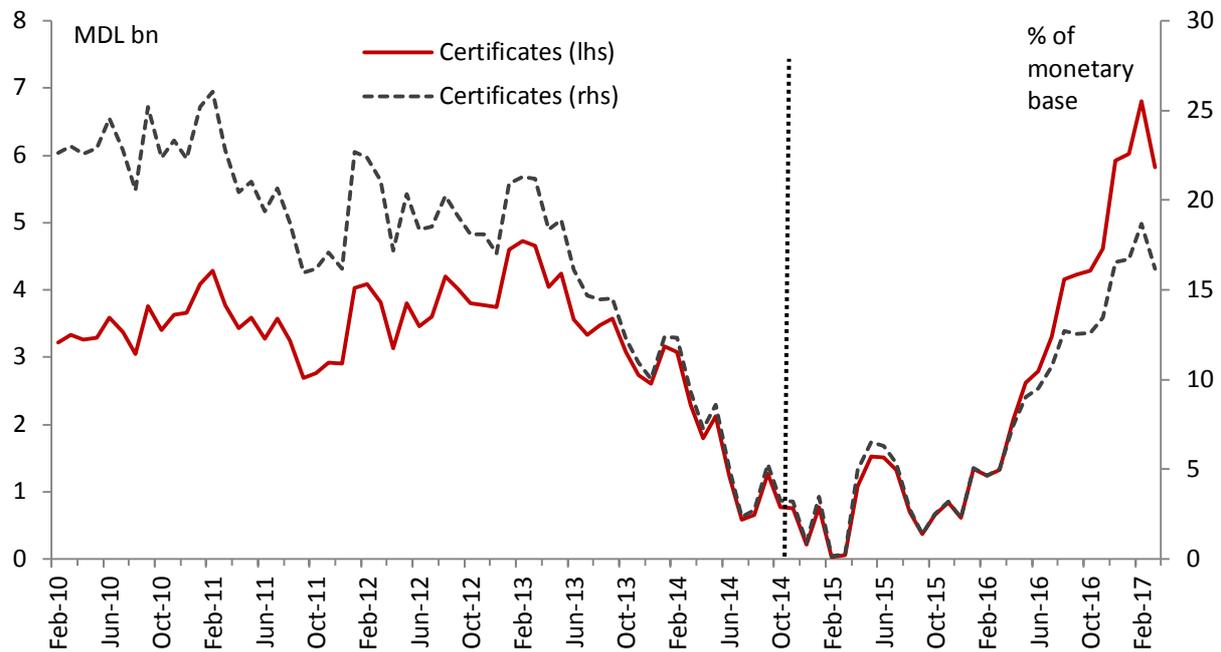
Source: National Bank of Moldova

NBM certificates absorb currently MDL 5.8 bn of base money (March 2017). The current rate of remuneration is 9%. Assuming the NBM continues to absorb this amount over the next 12 months at the same interest rate, this would amount to payments to the banking sector of MDL 522 m.

In total the NBM payments would amount to MDL 1.07 bn per year, if absorption measures were continued in the same manner as they are used currently.

**Figure 6**

NBM certificates in MDL m and certificates in percent of MDL base money



Source: National Bank of Moldova

While these payments are directly connected to the withdrawal of liquidity, the NBM receives payments for its Lei assets. Here we have to consider the government bonds, which were issued and transferred as a compensation for worthless bank claims. These government bonds amount to MDL 13.34 bn, with coupons of 1.4% (for maturities up to ten years) and 5.3% (for maturities of 11 to 25 years). Summing up, the coupon payments for one year the NBM receives MDL 618 m.

In addition, the central bank has other government bonds amounting to MDL 2.3 bn. On this amount, the NBM receives on average 8% (estimate) interest payments amounting to MDL 184 m (estimate).

Thus, the NBM receives interest payments on government bonds of around MDL 800 m per year. Considering net foreign assets of USD 1.96 bn, with an estimated interest rate of 1%, revenues from this side amount to USD 19.6 m or (with MDL/USD=19.24) MDL 377 m. Adding this to the government bonds total income is at MDL 1,177 m.

The result of this “back on the envelope” calculation is that there is a net interest income of only MDL 112 m. Considering that operating expenses were at MDL 270 m in 2015, it seems difficult to avoid a financial loss in the current situation. In 2016 the cash flow out of interest payments and interest receipts as well as payments to personnel and suppliers was at MDL -494 m.

**Table 1**

Rough estimation of financial results of NBM for 2017

<b>Assets</b>	<b>Amount, MDL m</b>	<b>Interest payments, MDL m/year</b>
Government bonds issued under the Law 235 of 3.10.2016	13,340	618
Government bonds (historical stock)	2,300	184 (estimate)
Net FX reserves	38,543 (or USD 1,960 m)	377 (estimate)
<b>Sum</b>		<b>1,179 (estimate)</b>
<b>Liabilities</b>		
MDL required reserves	10,500	545
Certificates	5,800	522
<b>Sum</b>		<b>1,067</b>
Net interest income		112
Operational expenses		270 (estimate on the basis of 2015 figures)
<b>Profit/loss (estimate)</b>		<b>-158</b>

*Source: Own calculation based on National Bank of Moldova data*

**Conclusion:** The NBM currently absorbs a total of MDL 16.3 bn through reserve requirements and certificates. Under the assumption that this policy is continued with the same amounts and rates, the yearly costs of absorption amounts to MDL 1,067 m, while interest income amounts to MDL 1,179 m, according to our estimate. This leads to a net interest income of MDL 112 m. Considering operational expenses of MDL 270 m, the result is a yearly loss of MDL 158 m, which reduces the own capital of the NBM. This development could endanger the autonomy of the NBM. Therefore, the NBM should look for a sustainable absorption policy.

#### 4 The tool box of the NBM to absorb liquidity

From the perspective of “who bears the costs of absorbing money” there are two possibilities: Either the NBM does it on its own, or the NBM absorbs the money with the financial support of MinFin.

The toolbox of monetary instruments to absorb base money without any help contains the following measures<sup>4</sup>:

1. Selling the historical stock of bonds
2. Adjusting the reserve requirement
3. Offering certificates

If the NBM cannot do it on its own (due to too high costs of absorption), there are two other instruments available

4. Issuance of government bills and/or bonds
5. Selling Law 235 bonds

In the long term, absorption could also take place via nominal GDP growth. If nominal growth were at 8% and MDL demand deposits grew at the same rate over five years, a 37% reserve requirement would absorb MDL 16.3 bn of base money. Additional absorption of MDL base money through certificates would not be needed. While this means that over the next years the problem of excess liquidity might become smaller, the conclusion is not that the problem could be solved by waiting, as the absorption measures still would cost money.<sup>5</sup>

Apart from that, a sustainable solution must fulfil the following three criteria:

- i. Absorption of sufficient liquidity
- ii. Reasonable cost for the NBM, in order to avoid a negative financial result and/or own capital becoming negative
- iii. No competition between the NBM and the Ministry of Finance on the money market, i.e. the debt market with short maturities

##### 4.1 Selling the historical stock of bonds

The NBM has a historical stock of government bonds of around MDL 2.3 bn. With the sale of these bonds, an amount of MDL 2.3 bn of base money could be withdrawn permanently from the market without making significant losses.

However, it is not clear how easily these bonds would find buyers, given that the only institutional buyers are banks. The sale process would have to be carried out in a very careful and gradual way, as bond markets are not very captive.<sup>6</sup> Thus, there is the risk of realizing losses and provoking higher interest rates, which could be harmful for the loan market and the real economy.

**Conclusion:** The sale of government bonds would be a very clean way to absorb liquidity permanently. Obviously, the amount of MDL 2.3 bn is not enough to solve the liquidity problem as excess liquidity is at MDL 6 m. However, it could contribute in an important way to the solution, provided these bonds are marketable.

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<sup>4</sup> In principle, the NBM could also absorb base money by selling foreign exchange reserves. However, given the high vulnerability of the country with respect to capital outflows, it does not seem wise to let the reserves diminish again.

<sup>5</sup> A shift from foreign exchange deposits to a higher share of MDL deposits would also help, as it would generate automatically more demand for MDL base money by banks for the purpose of depositing it into the required reserves; growth in loan activity would lead to the building up of MDL deposits (thereby generating again demand for base money through the required reserves). With respect to the latter point, the loan volume has decreased over the last few years as many banks are still in the process of cleaning their balance sheets lowering the burden of non-performing loans.

<sup>6</sup> The Moldovan T-Bond market transaction volume has been at only MDL 30 m in 2016, down from MDL 144.6 m in 2015.

## 4.2 Adjusting the reserve requirement

Reserve requirements have proved to be a very effective instrument to withdraw liquidity at limited relative costs. The NBM could reduce the remuneration of the required reserves, which is now at 5.2% [6% on (37% - 5%), i.e. 5.2% p.a.]. Such reduction should happen gradually to avoid shocks on the currency market. On the basis of the current required reserves of MDL 10,500 m, a reduction of the effective remuneration rate by 1pp from 5.2% to 4.2% would reduce the cost by more than MDL 104 m per year. This would be an important contribution to reduce the loss of the NBM.

**Conclusion:** Reserve requirements should continue to play a key role, as in many emerging markets. However, to reduce the cost for the NBM, the effective interest rate paid to banks should be considerably reduced. The reduction should happen in a gradual way.

## 4.3 Issuing NBM certificates

Currently, the NBM offers certificates of two weeks' maturities twice a week with a fixed interest rate of 9%. The instrument is rather expensive, with a yearly burden of MDL 90 m per MDL 1 bn absorbed. Banks seem to be quite comfortable with this instrument, which translates into a disincentive for granting loans to the real economy.

Three aspects could be adjusted: First, the frequency of auctions could be reduced from twice a week to once a week or even only once in two weeks. This might help to develop the money market<sup>7</sup> and is an incentive for banks to look for other investment opportunities, especially on the shorter term trade credit market. Secondly, the maturity of the certificates could be increased to 30 days. Thirdly, the amount offered could be limited, combined with sale by auction, where the highest bidding are served first.<sup>8</sup> This could help to bring the interest rate costs of this instrument down and could be an additional support for the development of the money market.

**Conclusion:** Certificates should be only a limited used fine tuning instrument complementary to other measures like the selling of government bonds (4.1) and the use of the reserve requirement (4.2). We would recommend a lower frequency of auctions, a slightly higher maturity (30 days) and a partial allotment.

## 4.4 Issuance of government bonds/bills; proceeds in a frozen account at the NBM

Given that the selling of the historical stock of government bonds won't be enough to absorb the excess liquidity, the instrument of issuing government bills and/or bonds should be considered. In this concept MinFin would issue bills and/or bonds and keep the raised funds at the NBM on a frozen account, to which MinFin has no access. In such a way, liquidity can be withdrawn from the market and a direct competition between the NBM and MinFin is avoided.

While a similar concept has been used for recently issued "liquidity buffer government bonds" of one and two year maturity, the interest rate burden lies with the NBM.<sup>9</sup> In future issues this could be changed, to avoid a worsening financial situation of the central bank. One way would be to share the burden between NBM and MinFin (e.g. 50% each).

A decision has to be taken whether bills (91, 182 or 364 days) or bonds (longer maturity) should be used. In this respect there is a tradeoff between the duration of the withdrawal of base money and the capacity of the financial market and therefore the absorption effect. While the issuance of bonds of two or three years maturity would lead to a longer term solution of the excess liquidity problem at

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<sup>7</sup> The activity on the money market is almost non-existent as measured by the volume of interbank credits and deposits. Repo markets for government bonds do not exist.

<sup>8</sup> It is not clear how successful such a strategy might prove given that the competition in the banking sector seems to be rather low, especially after the three fraudulent banks dropped out of the market.

<sup>9</sup> Actually, the MinFin has put the proceeds in deposits at the central bank receiving exactly the interest payments needed to cover the payments to investors.

first sight, the amounts that could be sold to banks might be rather limited. In this respect it would be important to analyse the combined issuance of MDL 500 m of the above mentioned liquidity buffer government bonds, which so far have been placed on the market. Over the whole year a total amount of MDL 2 bn is planned.

**Conclusion:** The issuance of government bills and/or bonds – with the proceeds blocked on a NBM account - would be an effective mean to withdraw liquidity from the market without generating competition between NBM and MinFin. It is important that both institutions agree on a burden sharing. If markets allow, bonds should be preferred in comparison to bills. However, given that the MDL government bond market has a volume of only MDL 6.7 bn and banks are the only investors in this market, the amount that would be absorbed by the market seems to be limited. Thus, this measure could not solve the MDL 6 bn excess liquidity problem on its own, but only as a complement to the other measures.

#### 4.5 Selling Law 235 bonds

The NBM was compensated for the 2015 emergency loans to the banking sector (which turned worthless) by government bonds in an amount of MDL 13.34 bn. 40% of these could be sold to the market without legal constraints. By itself, selling bonds would have the advantage of withdrawing permanently liquidity from the market. However, due to the low coupon of the bonds (1.4% for maturities of up to 10 years, afterwards 5.3%), the NBM would be confronted with losses. Selling bonds with a maturity of October 2017 to October 2021, which sum up to a nominal value of MDL 990 m, would be valued on average some 18% below their nominal value, which would mean a loss of MDL 176 m. In the current situation, the NBM does not seem to be able to absorb such a loss. Apart from these unwelcome losses, it might prove very difficult to sell bonds with maturities longer than three years to a market that lacks institutional investors like pension funds and insurance companies.

Hypothetically, a solution to this problem could be the restructuring of these government bonds by the MinFin. The coupons and the maturity were to be adjusted to make these instruments marketable. Since the deal on these debts has been finalised only some months ago, it is unlikely that such a restructuring can take place in the short-term. However, in the next years this option should be kept as a quite sensible possibility to absorb liquidity in an orderly manner.

**Conclusion:** Selling Law 235 bonds (maturity 2017-2021) could absorb only MDL 990 m, which is much less than the excess liquidity of MDL 6 bn. More importantly, the selling would involve sizeable losses for the NBM. Thus, this instrument does not look very attractive.

## 5 Conclusions and recommendations

Table 2 sums up the discussion in part 4.

**Table 2**

Comparison of costs of different absorption measures

Instrument	Potential absorption, MDL m	NBM costs for absorbing MDL 1 bn, MDL m	Total costs per year, MDL m	Temporary vs. permanent absorption
<b>Selling government bonds (historical stock)</b>	Up to 2,300	Not clear	Not clear	permanent
<b>Reserve requirement absorbing at an effective rate of 5,2%<sup>10</sup></b>	Currently 10,500	52	545	As long as the reserve requirement is not relaxed.
<b>Reserve requirement absorbing MDL 1000 million at an effective rate of 4,2%<sup>11</sup></b>	Currently 10,500	42	441	As long as the reserve requirement is not relaxed.
<b>Certificates</b>	Currently 5,800	90	522	2 weeks
<b>Issuance of government bills and bonds, if burden is shared (50%) between NBM and MinFin</b>	≤ 2,000/year	50% of 67,6 <sup>12</sup> (bills) = 33,8	67,6	91 to 364 days
		50% of 78,4 <sup>13</sup> (bonds) = 39,2	78,4	2 years
<b>Selling government bonds which are on the balance sheet (Law 235 bonds)<sup>14</sup></b>	≤ 1,000 (if maturities up to 2021 are considered)	176	176	permanent

Source: Own calculation based on National Bank of Moldova data

**Only-NBM solution.** The NBM should aim at reducing the costs of the absorption via reserve requirements. Currently, the remuneration of MDL reserve requirement costs MDL 545 m per year. This could be reduced to MDL 441 m per year by bringing down the effective remuneration rate from 5.2% to 4.2%. Furthermore, the NBM should start to sell government bonds from the historical stock. While the central bank would lose some interest rate income by selling these bonds, the withdrawal of liquidity would be permanent, which is a very positive feature.

<sup>10</sup> As to the costs: To facilitate matters, we calculate with the current effective rate of 5.2%, even though the rate would change, if the reserve requirement ratio would change. For example, with a reserve requirement ratio of 37%, the effective remuneration rate is  $(32/37)*6\% = 5.189\%$ . With a reserve requirement of 40% (which would be needed to absorb additional MDL 1,000 m) the remuneration rate would be  $(35/40)*6\% = 5.250\%$ .

<sup>11</sup> As to the costs: To facilitate matters, we calculate with an effective rate of 4.2%, even though the rate would change, if the reserve requirement ratio would change.

<sup>12</sup> This figure is calculated based on an average interest rate of T-Bills for 91, 182 and 364 days, which is currently 6.76%.

<sup>13</sup> This figure is calculated based on interest rate for two-year government bonds, which is currently 7.84%.

<sup>14</sup> The underlying assumptions are: Bonds of maturities up 2022 are sold (which amount to MDL 990 m), assuming a yield of 7.5%. Selling longer maturities would be more expensive. Selling bonds with maturities of 2023 to 2025 would involve losses of around 33% (again assuming a yield of 7.5%).

NBM certificates are the most expensive measure to withdraw liquidity. On top, liquidity is only withdrawn for two weeks. Thus, certificates should be only used as a fine tuning instrument. Maturity should be increased to 30 days and the allotment should be limited, which could bring down the interest rates somewhat.

**Solution involving NBM and MinFin.** If the government is ready to solve the problem together with the NBM, issuance of government bills or bonds would be an important step to withdraw liquidity. This could happen via government bonds, where the receipts are put on a frozen account at the NBM. The interest rate burden should be shared between the government and the NBM. As a result, absorption could take place at a lower cost to the NBM than reserve requirements. While only a limited amount of up to MDL 2 bn per year seems realistic, such an amount would be an important contribution for the absorption of the excess liquidity of MDL 6 bn.

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