



NATIONAL BANK OF SERBIA

**RESULTS OF THE QUANTITATIVE STUDY OF THE
EFFECTS OF THE INTRODUCTION OF THE
LIQUIDITY COVERAGE RATIO**

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1. Introduction

Up until the outbreak of the global financial crisis, regulatory frameworks across countries were largely heterogeneous in terms of liquidity risk management. In line with Basel II standards, liquidity risk was included in Pillar 2 of these standards, and the focus was on defining the principles for managing this risk. While some supervisors focused on defining qualitative liquidity risk management standards, others also introduced quantitative indicators and limits for the purposes of monitoring bank exposure to this risk, whereby the definitions themselves and the scope of these indicators were highly heterogeneous across countries.

Basel III standards and Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (hereinafter: Regulation), through which these standards were implemented in the European Union, prescribed the new Liquidity Coverage Ratio (hereinafter: LCR), designed to ensure that banks are safe from potential short-term liquidity disruptions. This ratio requires banks to hold sufficient high-quality liquid assets which would allow them to sustain a 30-day stress scenario, i.e. to cover net liquidity outflows over a stress period lasting up to 30 days. In stress scenarios, a bank may use liquid assets to cover net liquidity outflows.

In October 2014, the European Commission adopted a delegated regulation¹ which specified in detail the manner of calculating this ratio. Also, at the level of the European Union, the minimum level of this ratio is gradually being increased from 60% on 1 October 2015 to 100%, the level it is set to reach by January 2018 at the latest.

The National Bank of Serbia (hereinafter: NBS) adopted the Decision on Risk Management by Banks which laid down two ratios to express and monitor the level of bank liquidity: liquidity ratio and narrow liquidity ratio, whose aim is to ensure that a bank has sufficient liquid receivables to cover its liabilities with maturity within one month from the date of liquidity ratio calculation.

Though there are similarities between the domestic regulatory framework for liquidity risk management and the framework under the Regulation, the conclusion that the domestic regulatory framework for liquidity risk management is not in line with Basel III standards is based on a more comprehensive scope of the regulatory framework based on Basel III standards, different approach to the calculation of the prescribed LCR, and more stringent criteria for including elements in its calculation.

In view of the above, it was necessary to assess the effects of the introduction of the new LCR on the liquidity of banks operating in Serbia prior to the introduction of this ratio in the domestic regulatory framework.

To that end, the NBS designed forms for the purposes of obtaining data from banks needed to assess the effects of the introduction of the new LCR. The NBS also drafted guidelines for completing the above forms. The reliability of data obtained from banks was verified and the identified inconsistencies corrected in communication with the banks.

A valuation analysis was carried out as at 30 June 2015 collectively for all currencies, but also for significant currencies, which were, for the purposes of the quantitative study, assumed to be RSD, EUR,

¹ COMMISSION DELEGATED REGULATION (EU) 2015/61 of 10 October 2014 to supplement Regulation (EU) No 575/2013 of the European Parliament and the Council with regard to liquidity coverage requirement for Credit Institutions

USD and CHF, in order to obtain an overview of the stock of liquid assets and net liquidity outflows in the above currencies in all banks.

For the purpose of the analysis, banks were classified by peer group, so that peer group 1 included banks with over 5% of banking sector balance sheet assets, peer group 2 included banks with 1% to 5% of banking sector balance sheet assets, while peer group 3 included banks with less than 1% of banking sector balance sheet assets.

2. Liquidity Coverage Ratio

The Liquidity Coverage Ratio is calculated as the ratio between liquid assets which meet the prescribed general and operational requirements and net liquidity outflows in the 30 days from the calculation of the ratio in stress conditions.

Table 1 shows LCR values at the level of the banking sector and by individual peer group, based on the results of the quantitative impact study, collectively for all currencies and by currency considered significant for the purposes of the quantitative impact study.

In addition to the above, the second part of Table 1 also shows the amount of liquid assets the individual banks lack to reach the LCR of 100%. This shortage of liquid assets was calculated as the sum of liquid assets a bank with the LCR under 100% would require to reach the level of 100%. The assumed spillover of liquid assets from the banks with the LCR above 100% to banks with the LCR below 100% was not taken into consideration.

Table 1: LCR and shortage of liquid assets

Group name	Currency	LCR (in %)	Shortage of liquid assets (in RSD 000)
Banking sector	Total	373.5%	2,543,270
	RSD	373.9%	2,623,809
	EUR	387.4%	6,376,243
	CHF	21.9%	26,731,242
	USD	229.4%	8,247,649
Peer group 1	Total	495.3%	0
	RSD	357.3%	0
	EUR	587.2%	0
	CHF	222.2%	3,049,192
	USD	208.5%	6,607,677
Peer group 2	Total	262.8%	1,242,192
	RSD	460.5%	0
	EUR	237.5%	6,376,243
	CHF	10.2%	22,990,987
	USD	348.7%	1,504,445
Peer group 3	Total	252.3%	1,301,078
	RSD	175.9%	2,623,809
	EUR	519.3%	0
	CHF	12.2%	691,064
	USD	532.3%	135,527

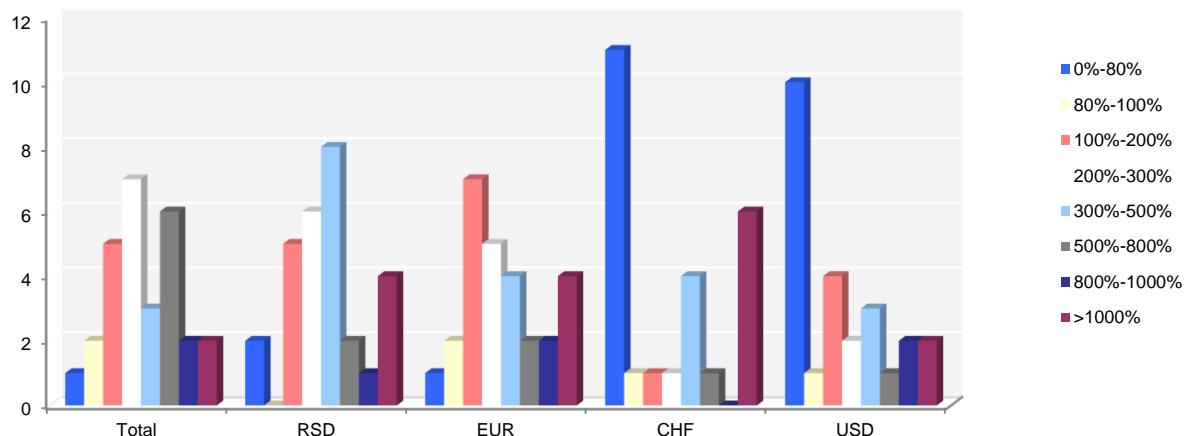
Based on Table 1, a conclusion can be drawn that the LCR would amount to 373.5% at the level of the banking sector, while the shortage of liquid assets would amount to RSD 2.5 bln.

As Table 1 shows, peer 1 group recorded the highest LCR collectively for all currencies. On the other hand, LCR values in peer groups 2 and 3 were at a similar level collectively for all currencies.

At the level of the banking sector and by individual peer group, another problem can be detected, which concerns the shortage of liquid assets in relation to net liquidity outflows in Swiss francs, which is indicated by low LCR in this currency, particularly at the level of the banking sector and in peer groups 2 and 3.

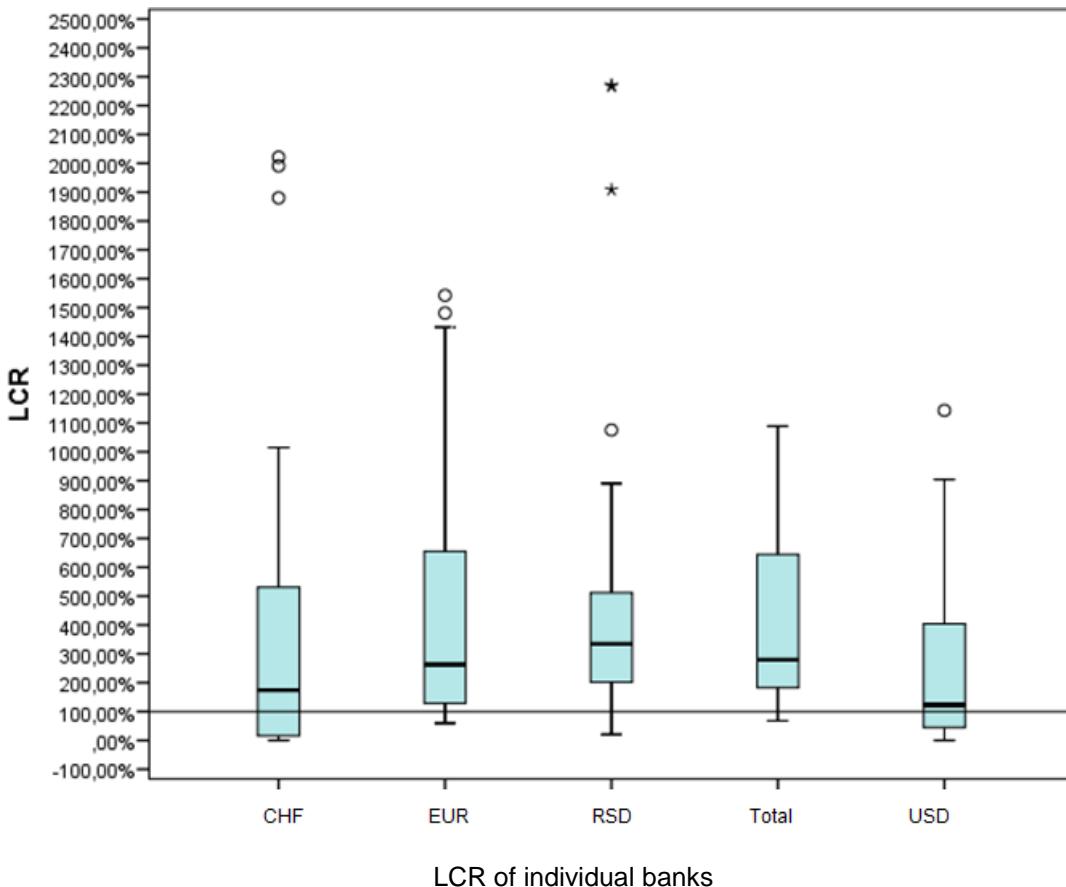
The following chart shows the number of banks with the LCR in the presented ranges.

Number of banks by LCR range



Collectively for all currencies, the LCR of most banks would range between 200% and 300% (7 banks) and between 500% and 800% (6 banks). According to this criterion, the LCR of only one bank would be below 80%, while the LCR of another two banks would fall in the range between 80% and 100%. By individual currency, the LCR of the majority of banks with respect to Swiss francs would be below 80% (as much as 11 banks).

The following chart shows maximum and minimum values, and the values of the first, second and third quartile of the LCR of individual banks.



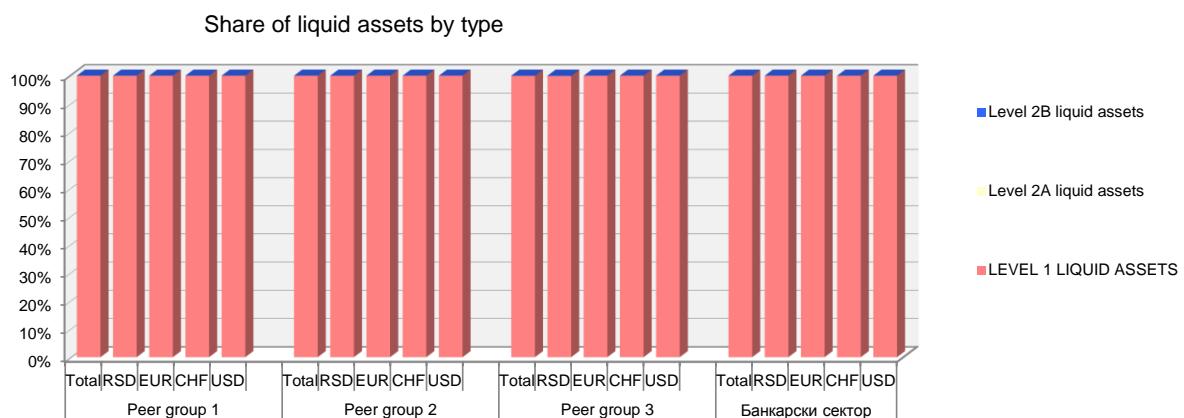
The chart shows that the lowest recorded LCR, collectively for all currencies, came at 68%. The value of the second quartile is around 280%, also observed collectively for all currencies. In addition, of all significant currencies, the lowest LCR was recorded for US dollars – 0.13%, followed by Swiss francs – 0.21%.

1.1. Liquid assets

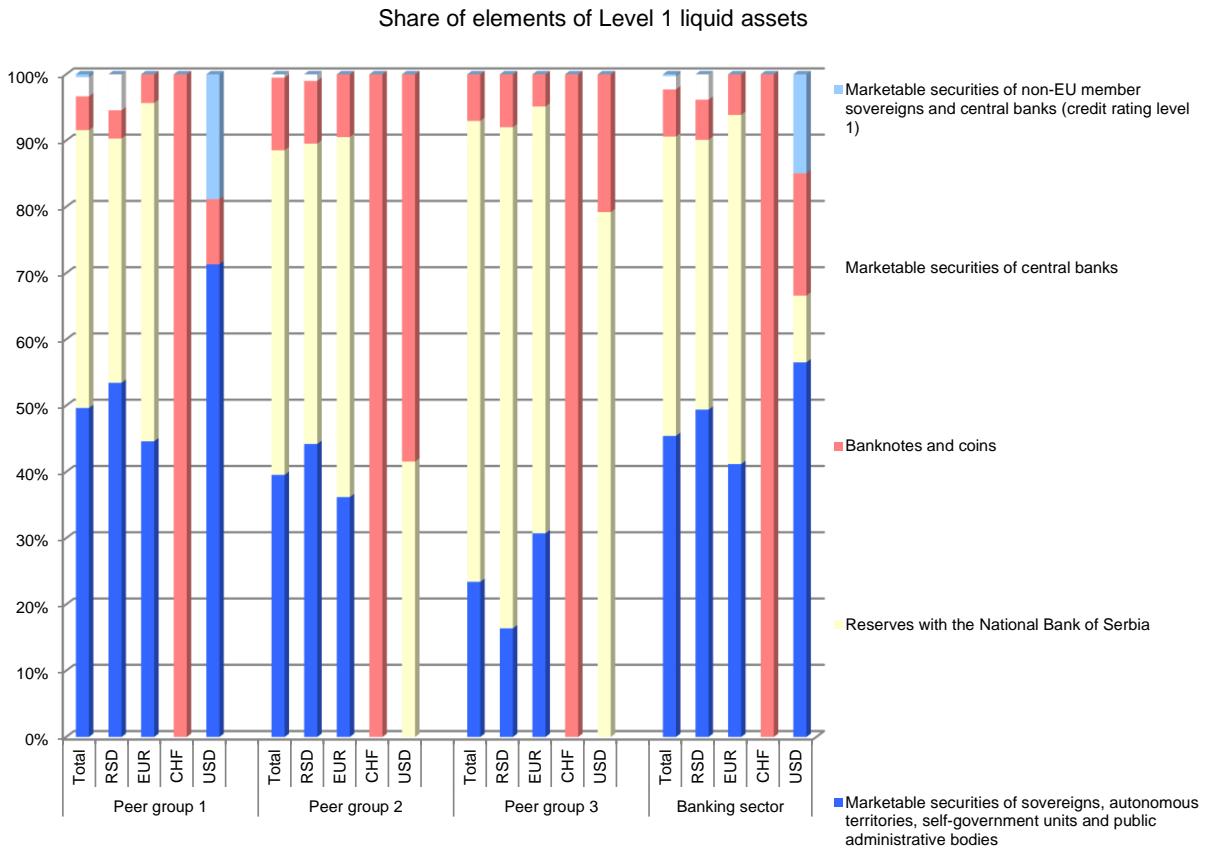
In accordance with Basel III standards, liquid assets which may be included in the calculation of the LCR are measured as the sum total of Level 1 liquid assets, which is the highest-quality type of liquid assets, almost all elements of which can be included to a 100 per cent in the LCR calculation, and Level 2 liquid assets, which can be classified into Level 2A and Level 2B liquid assets, whereby the following is relevant:

- at least 60% of liquid assets included in the LCR calculation must be Level 1 liquid assets;
- Level 2B liquid assets can make up 15% of liquid assets at the most.

As the following chart shows, almost 100% of liquid assets in the Serbian banking sector and in each individual peer group are Level 1 assets. Apart from Level 1 liquid assets, domestic banks hold a very small amount of Level 2B assets, which, in their case, are made up only of shares of Belex15 companies.



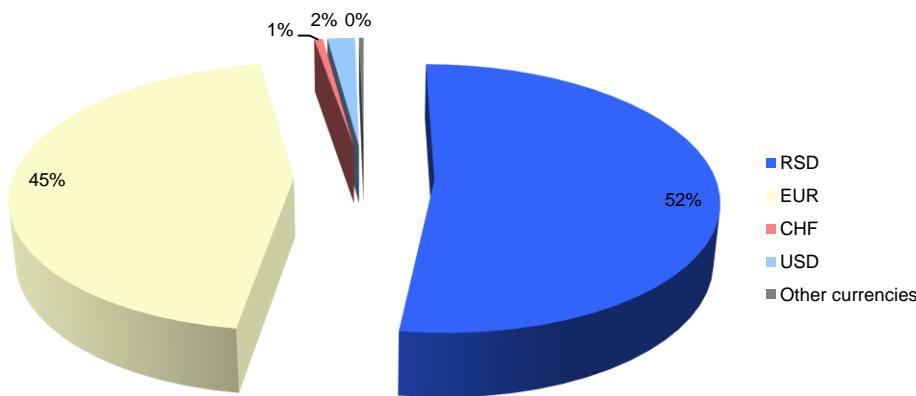
Within Level 1 liquid assets, NBS reserves account for the highest share and are followed by excess liquidity deposits and allocated dinar and foreign currency required reserves, as well as government securities. At banking sector level, collectively for all currencies, these two forms of Level 1 liquid assets account for an almost equal share (these two forms of Level 1 liquid assets together make up more than 90% of bank liquid assets); in peer group 1, government securities hold a slightly larger share, while reserves with the NBS account for a larger share in peer groups 2 and 3. This can be seen in the following chart which shows the share of various elements of Level 1 liquid assets at the level of the banking sector and by peer group, both collectively for all currencies and by currency considered significant for the purposes of the quantitative impact study.



The above chart shows that reserves with the NBS and government securities account for the highest share of Level 1 liquid assets in dinars and euros, and collectively for all currencies, while 100% of Level 1 liquid assets in Swiss francs relates to vault cash. As regards the US dollar, government securities are predominant at the level of the banking sector and in peer group 1, while vault cash is predominant in peer group 2, and the reserves with the NBS in peer group 3.

The following diagram shows the share of liquid assets at the level of the banking sector by currency. It can be seen that dinar liquid assets account for the highest share (52%), followed by euro liquid assets (45%), while other currencies account for 2% (USD) and less (CHF and others).

Share of liquid assets by currency at the level of the banking sector



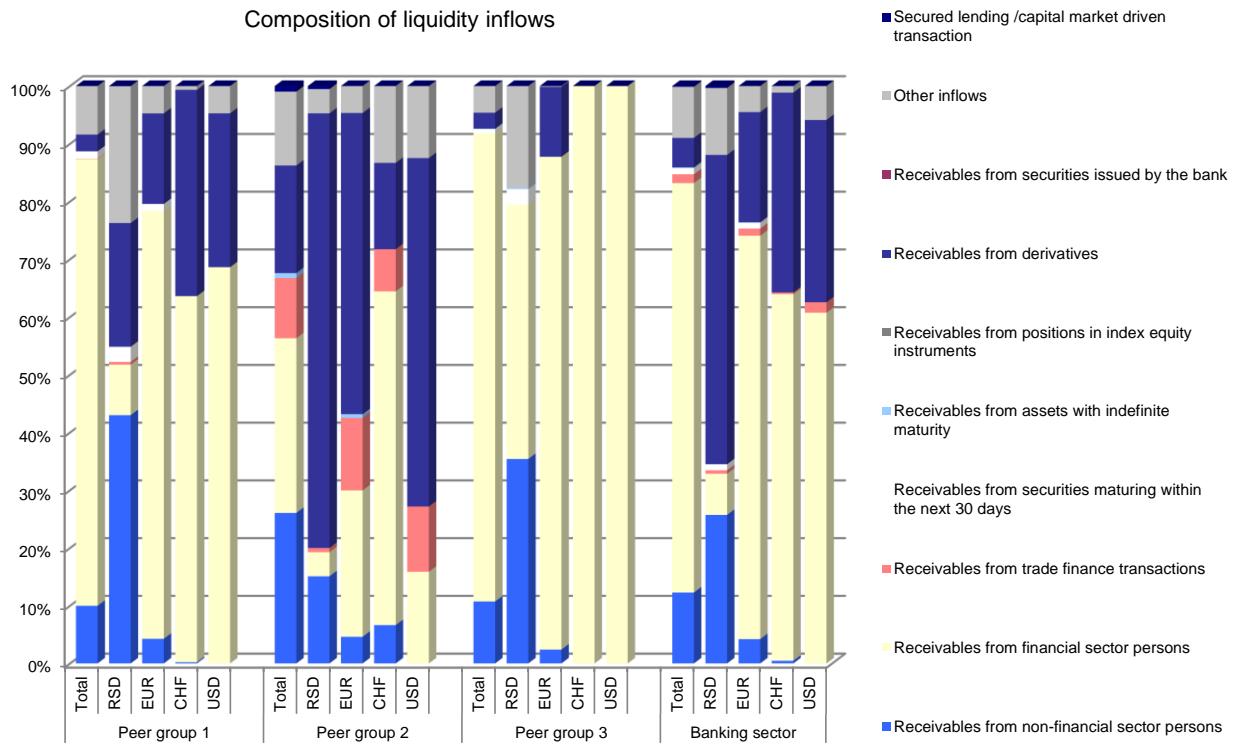
It also needs to be mentioned here that, in accordance with Basel III standards, funds in accounts with other banks are not included in liquid assets for the purposes of calculating the LCR, given that in stress conditions in the market, a bank may encounter difficulties in accessing these funds if the other contractual party is also exposed to those stress conditions, but the above cash can be included in liquid outflows in the form of receivables from the specific bank. At the level of the Serbian banking sector, according to data submitted within the quantitative impact study, a total of RSD 265.4 bln can be found in accounts with other banks, of which RSD 237.6 bln is in banks with investment grade credit rating. Of these funds, peer group 1 holds RSD 98.7 bln, 96% of which is in banks with investment grade rating, peer group 2 holds RSD 159.7 bln of funds in accounts with other banks, 85% of which is in banks with investment grade ranking, while peer group 3 holds RSD 7.3 bln of funds in accounts with other banks, 88% of which is found in banks with investment grade ranking.

1.2. Liquidity inflows

Under Basel III standards, bank inflows from receivables maturing within the next 30 days may be included as liquidity inflows for LCR calculation purposes if they meet the following conditions:

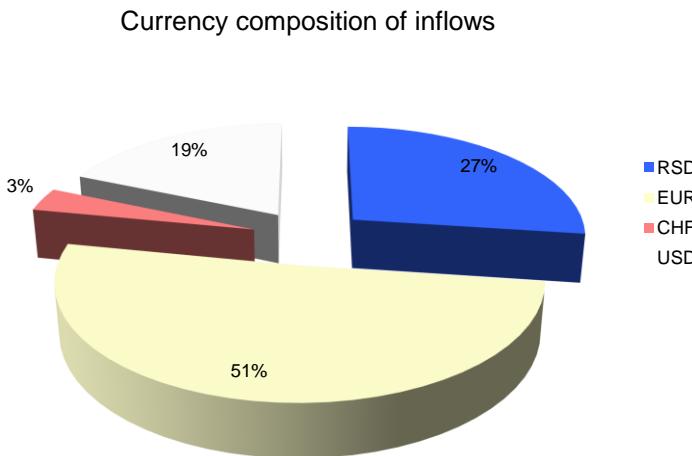
- the borrower meets its obligations on time (without a single day of delay);
- the bank has no reason to expect non-performance within a 30-day horizon;
- these are not inflows from new borrowing by the bank;
- these are not inflows from other assets of the bank already included as liquid assets for the purpose of LCR calculation, except for inflows expected from such assets and not taken into account when calculating the market value of such assets.

The chart below shows the composition of liquidity inflows of the banking sector and individual peer groups collectively for all currencies and by individual significant currency. The chart shows that inflows from receivables from financial sector persons, referring primarily to receivables in respect of balances in nostro accounts, accounted for by far the largest share of total inflows at banking sector level and in peer groups 1 and 3, observed collectively for all currencies, while in peer 2 group, the share of this type of inflows is slightly higher than the share of inflows from receivables from non-financial sector persons.



Breakdown by individual currency shows that, in dinars, inflows from derivatives, relating primarily to forward foreign exchange contracts calculated on a net basis for each other counterparty if they are the subject of netting agreements from Section 312 of the Decision on Capital Adequacy of Banks, were dominant at banking sector level and in peer group 2. By contrast, inflows from receivables from non-financial sector persons were dominant in peer group 1, and inflows from receivables from financial sector persons in peer group 3. In euros, in peer groups 1 and 3 and at banking sector level, inflows from receivables from financial sector persons were dominant, while inflows from derivatives held the highest share in peer group 2. In Swiss francs, at banking sector level and in all three peer groups, inflows from receivables from financial sector persons were dominant. In US dollars, inflows from receivables from financial sector persons were dominant in peer groups 1 and 3 and at banking sector level, while inflows from derivatives were dominant in peer group 2 only.

The chart below shows the composition of inflows at banking sector level by individual significant currency.



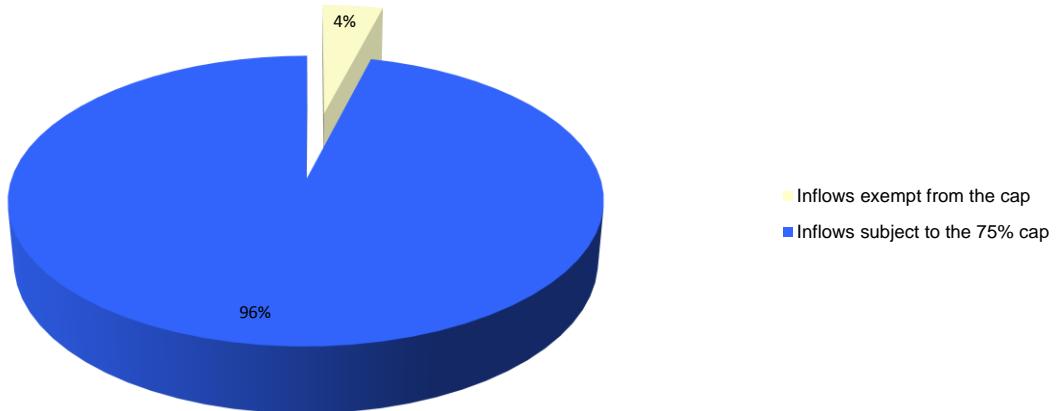
The chart shows that the largest share, i.e. 51% of liquidity inflows of the banking sector relate to inflows in euros, 27% to inflows in dinars, 19% to inflows in US dollars and only 3% to inflows in Swiss francs.

Under Basel III standards, total inflows of liquid assets included in the LCR calculation are subject to a cap of 75% of total outflows of liquid assets included in the LCR calculation, to ensure that banks have sufficient liquid assets available and do not rely exclusively on expected inflows in order to achieve the required LCR level. Certain exemptions to this cap may apply, subject to prior consent of the NBS, including:

- inflows from transactions with parent companies, subsidiaries or subsidiaries of parent companies;
- inflows in respect of bank deposits with another bank which is a member of the same banking group, if prescribed conditions are met.

Since it was assumed, for quantitative impact study purposes, that the NBS's consent to the above exemption has been granted, the chart below shows the share of inflows to which the cap applies and inflows exempt from the cap, where it is evident that only 4% of inflows refers to inflows that may be exempt from the cap of 75% of total outflows of liquid assets.

Inflows subject to and exempt from the 75% of outflows cap



As the bulk of inflows are subject to the 75% cap, the table below shows the amount of inflows which could not be deducted from liquidity outflows due to the above cap at the time of calculating net liquidity outflows. The sum total of such inflows is shown for banks belonging to individual peer groups and for all banks in Serbia's banking sector.

Table 2: Inflows excluded due to the 75% cap

(in 000 RSD)

Group name	Total	RSD	EUR	CHF	USD
Peer group 1	18,951,306	0	25,984,178	767,208	19,861,873
Peer group 2	0	20,193,784	1,210,994	35,492	3,313,183
Peer group 3	945,664	482,860	2,668,230	17,359	606,142
Banking sector	19,896,970	20,676,645	29,863,402	820,059	23,781,198

The table above shows that, at banking sector level, the largest amount of inflows excluded because of the above cap was in euros (RSD 29.9 bln). This was also the case in peer group 1 (RSD 26 bln) and peer group 3 (RSD 2.7 bln), while in peer group 2 most inflows excluded from LCR calculation were in dinars (RSD 20.1 bln).

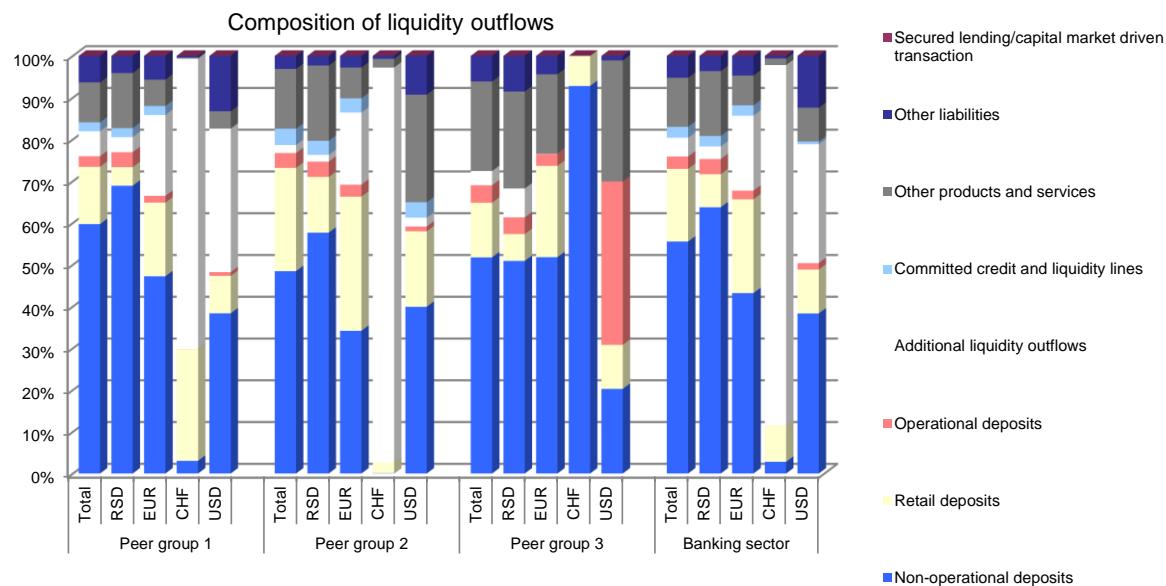
1.3. Liquidity outflows

Under Basel III standards, outflows of liquid assets used for the purpose of LCR calculation include:

- current amount of stable retail deposits and other retail deposits;
- current amount of other obligations maturing within the next 30 days or contractually repayable within 30 days, **and/or where the creditor may request repayment of funds within 30 days, based on the contract;**
- additional outflows (for collaterals);

- maximum amount bank clients may withdraw within the next 30 calendar days under undrawn credit or liquidity lines approved by the bank;
- additional outflows of liquid assets stemming from other products and services.

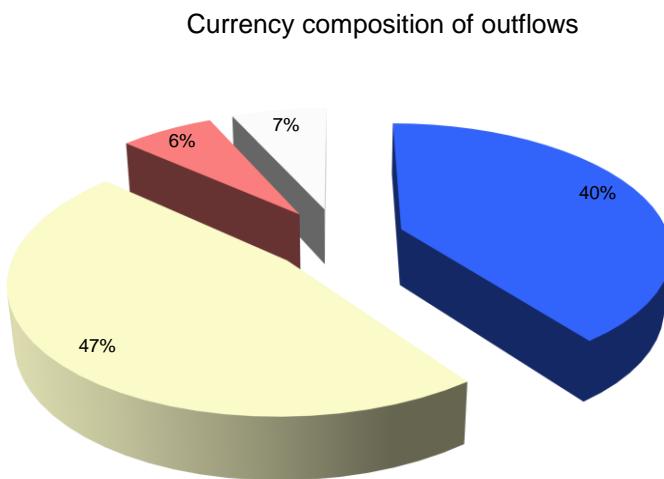
The chart below shows the composition of outflows of liquid assets included in the LCR calculation, collectively for all currencies and by individual significant currency, at banking sector level and by individual peer group.



As the chart shows, outflows stemming from non-operational deposits, including primarily deposits of legal entities that are not generated through correspondent banking or prime brokerage services, accounted for the highest share of liquidity outflows. This is the case at banking sector level and in all peer groups, collectively for all currencies and for almost all individual significant currencies. An exception are Swiss francs, at banking sector level and for peer groups 1 and 2, where outflows stemming from derivatives were dominant, including primarily forward foreign exchange contracts and liquidity outflows stemming from contracts concluded by the bank where there is possibility of additional liquidity outflow being incurred or obligation arising for the bank to deposit additional collateral within 30 calendar days, in case bank's creditworthiness deteriorates and/or its credit rating goes down by up to three notches. There is also an exception for peer group 3, in US dollars, where outflows stemming from deposits made by clients within an established operational relationship with the bank are dominant.

In addition to non-operational deposits, retail deposits accounted for a high share in euros and Swiss francs, while, in dinars, outflows stemming from other products and services were dominant, mostly relating to off-balance sheet items such as issued guarantees, recallable credit lines, credit cards and current account overdrafts.

In terms of the currency composition of liquidity outflows, outflows in euros (47%) were dominant, followed by those in dinars (40%). Outflows in US dollars and Swiss francs accounted for much lower shares of 7% and 6%, respectively.



3. Conclusion

On the basis of the presented results of the quantitative study measuring the impact of introduction of the new LCR ratio, Serbia's banking sector can be said to be reasonably liquid. The value of the LCR is over 100%, observed collectively for all currencies, at banking sector level.

Although Basel III standards do not require banks to maintain their LCR above 100% in individual currencies, but only collectively for all currencies, they do prescribe that banks need to match the currency consistency of liquid assets and net outflows of liquid assets, to ensure they have enough liquid assets in a given currency for covering net outflows in that currency in stressed conditions. If necessary, competent bodies may prescribe a minimum required LCR for a specific currency. Results of the analysis have shown that banks have insufficient liquid assets in Swiss francs and US dollars relative to net outflows in these currencies. Banks, therefore, need to take the currency consistency of their assets into account and match it with net liquidity outflows.

Also, on the basis of data available to the NBS, it was not possible to verify certain data submitted by banks as part of the quantitative impact study. This refers primarily to the amount of retail deposits which are excluded only subject to fulfilment of prescribed conditions (in order to ensure that banks exclude only those deposits that cannot be withdrawn within the next 30 days), as well as to other clients' deposits maturing in over 30 days, but where the client is entitled to request deposit withdrawal within the next 30 days.