

# Setting the floor on the gross loans to deposits flows ratio as a macro-prudential measure in the downturn

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## Abstract

Paper presents a macro-prudential instrument, which aims at slowing down the rapid decline in the loan-to-deposit (LTD) ratio. For banks with positive growth in deposits, the instrument sets the floor on the gross loans to deposits flows (GLTDF) ratio. For non-compliant banks, the instrument lays down a system of corrective measures to build higher liquidity buffers. Certain exemptions are allowed in order to ensure that the instrument does not prevent banks and enterprises from restructuring and does not limit their scope to diversify and modernize their funding. It is being introduced as a temporary measure until the LTD ratio stabilises and banks achieve a stable funding structure. As part of the overall package, an indicative target range for the LTD ratio of the banking system has also been set, the upper bound of which being the more binding constraint.

The GLTDF is a macro-prudential instrument which reduces the systemic risks associated with a rapid decline in the LTD ratio, curbs procyclical behaviour of banks and promotes functioning financial intermediation even in recession and a sustainable long-term contribution of the financial sector to economic growth. In a period of prolonged recession and contraction in lending, the GLTDF instrument preserves an active role for macro-prudential policy even when buffers have already been released or not yet formed.

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## I. Introduction

LTD ratio regulation is employed in a number of countries, typically in the form of a cap on a ratio of loans to stable funding. The latter may cover only deposits by the non-banking sector or may also include liabilities to international institutions, long-term liabilities from debt securities issued or liabilities to parent banks, subordinated liabilities and equity. Examples of upper limits for the ratio of loans to stable funding include the following: New Zealand<sup>2</sup> 133% (CFR at least 75%), Ireland<sup>3</sup> 122.5%, Portugal<sup>4</sup> 120%, Austria<sup>5</sup> and Slovakia<sup>6</sup> 110%, South Korea<sup>7</sup> 100%, Saudi Arabia<sup>8</sup> 85%, and China<sup>9</sup> 75%.

In some cases a floor or target range is set. In the United States there is regulation<sup>10</sup> designed to check whether the bank's statewide loan-to-deposit ratio is at least one-half of the published host state loan-to-deposit ratio, in order to prevent a bank from establishing or acquiring branches outside of its home state primarily for the purpose of attracting deposits. Where banks fail to meet the limit, the appropriate banking agency check and determine whether the bank is reasonably helping to meet the local credit needs. The Bank of Indonesia<sup>11</sup> has introduced a target range for the LTD ratio of individual banks of between 78% and 100%, where banks achieving at least 14% capital adequacy are permitted to have an LTD ratio of over 100%, while those who fail to meet these requirements must hold higher reserves with central bank.

The LTD ratio may be set not only with respect to stocks but also with respect to flows, i.e. changes in stocks. As part of the sustainability package to strengthen the sustainability of the business models of large internationally active Austrian banks<sup>12</sup>, the monitoring of the loan-to-local stable funding ratio (LLSFR) has been introduced in terms of both stocks and flows of subsidiaries of Austrian parent banks. The cap was set at 110% for both the flow and the stock ratio.

EU regulation CRR/CRD IV does not set an LTD ratio, which instead falls within the scope of national legislation. The LTD ratio is conceptually closer to the net stable funding ratio (NSFR), the ratio of available to required stable funding over a one-year horizon, while the liquidity coverage ratio (LCR) focuses on liquidity risk within a 30-day window. Both measures include a wide array of assets and stable funding, weighted to reflect their expected movement under stressed conditions. The LTD ratio, on the other hand, is unweighted, defines stable funding to include only deposits, and considers only loans among assets.

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<sup>2</sup> Reserve Bank of New Zealand, Liquidity Policy, Document BS13, March 2011.

<sup>3</sup> [http://www.rbnz.govt.nz/regulation\\_and\\_supervision/banks/banking\\_supervision\\_handbook/3675928.pdf](http://www.rbnz.govt.nz/regulation_and_supervision/banks/banking_supervision_handbook/3675928.pdf)

<sup>4</sup> Central Bank of Ireland, The Financial Measures Programme Report, March 2011.

<sup>5</sup> Banco de Portugal, Financial Stability Report, November 2011, Box 1.2: Structural adjustments of the credit to deposits ratio in the funding and capital plans of the eight major Portuguese banking groups, p. 25. 25

<sup>6</sup> Financial Market Authority, Supervisory guideline to strengthen the sustainability of the business models of large internationally active Austrian banks, 14 March 2012.

<sup>7</sup> Národná banka Slovenska, Recommendation No 1/2012 of the Financial Market Supervision Unit of Národná banka Slovenska of 16 January 2012 on supporting the stability of the banking sector.

<sup>8</sup> Choongsoo Kim, Macro-prudential policies in Korea, Key measures and experiences, Banque de France Financial Stability Review, No. 18, April 2014.

<sup>9</sup> Saudi Arabia: Financial System Stability Assessment—Update, IMF Country Report, No. 12/92, April 2012.

<sup>10</sup> [https://www.fitchratings.com/gws/en/fitchwire/fitchwirearticle/China-Tightens-Bank?pr\\_id=821829](https://www.fitchratings.com/gws/en/fitchwire/fitchwirearticle/China-Tightens-Bank?pr_id=821829), 26 February 2014

<sup>11</sup> Board of Governors of the Federal Reserve System, Section 109 Host State Loan-to-Deposit Ratios.

<http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20130701a1.pdf>

<sup>12</sup> PwC, The Report, Indonesia 2012, p. 61.

[http://www.pwc.com/id/en/publications/assets/TheReport\\_Indonesia2012\\_OBG.pdf](http://www.pwc.com/id/en/publications/assets/TheReport_Indonesia2012_OBG.pdf)

<sup>13</sup> Financial Market Authority, Supervisory guideline to strengthen the sustainability of the business models of large internationally active Austrian banks, 14 March 2012.

## II. Definition of the GLTDF instrument

In March 2014 the Governing Board of the Bank of Slovenia adopted a regulation introducing a new macro-prudential instrument that became mandatory for banks at the end of June 2014. The instrument imposes a floor on the gross loan-to-deposit flow (GLTDF) ratio, which is the ratio of the annual change in the stock of loans to the non-banking sector (gross before impairments) to the annual change in non-banking sector deposits.

The purpose of the instrument is to slow the rate of decrease in the non-banking sector LTD ratio and promote a more stable funding structure of the banking system. The objective is not to hinder further reductions in the LTD ratio, since it is important that banks reduce their dependency on wholesale funding and increase the proportion of stable sources in their funding structure. It is, however, important that the LTD ratio should decrease at a more gradual pace based primarily on growth in non-banking sector deposits rather than on a contraction in lending, or else that banks should have adequate liquidity buffers.

The instrument was introduced as part of the Regulation on the Minimum Requirements for Ensuring an Adequate Liquidity Position of Banks and Savings Banks, which lays down minimum requirements for the GLTDF ratio, corrective measures in the event of non-compliance, and exemptions from the calculation. It is being introduced as a temporary measure until the LTD ratio stabilises, banks achieve a stable funding structure and systemic risks are curbed.

**Minimum requirements.** At the end of each quarter a bank exhibiting positive annual growth in deposits must meet the following conditions:

- (a) from 30 June 2014 up to and including 31 March 2015: **GLTDF ratio  $\geq$  0%**,  
i.e. if there is positive annual growth in non-banking sector deposits, the gross stock of loans to the non-banking sector (before impairments) should not decrease;
- (b) from 1 April 2015 onward: **GLTDF ratio  $\geq$  40%**,  
i.e. if there is positive annual growth in non-banking sector deposits, gross loans to the non-banking sector should increase by at least 40% of the increase in deposits.

**Corrective measures.** A twofold system of corrective measures is applied to banks which fail to meet the minimum requirements for the GLTDF ratio in terms of annual changes in stocks.

- I) The first corrective measure continues to steer the bank towards meeting the GLTDF ratio. In this case the bank must meet the more stringent requirements of the GLTDFq ratio, which is calculated on the basis of quarterly changes. If it exhibits positive quarterly growth in deposits, the bank must meet the following conditions:
  - (a) from 30 June 2014 up to and including 31 March 2015: **GLTDFq ratio  $\geq$  40%**,
  - (b) from 1 April 2015 onward: **GLTDFq ratio  $\geq$  60%**,i.e. the quarterly increase in gross loans to the non-banking sector should be at least 40% of the quarterly increase in deposits in the first year after the measure comes into force, and at least 60% in the second year.
- II) Where a bank, despite the requirements of the first corrective measure, fails to meet both the minimum requirement for the GLTDF ratio and the more stringent requirements of the GLTDFq ratio, it must additionally meet liquidity ratios in the following succession:
  - (a) **KL1 excluding pBSp**: After the first quarter in which it fails to meet the minimum requirements for the GLTDF ratio and the requirements for the GLTDFq ratio, it must within two months begin to meet the first-bucket liquidity ratio (KL1) without taking into account the pledged amount of the pool of eligible collateral at the Bank of Slovenia.
  - (b) **KL2 including pBSp**: After a second such quarter it must additionally begin to meet the second-bucket liquidity ratio (KL2), taking into account the pledged amount of the pool of eligible collateral at the Bank of Slovenia.

- (c) **KL2:** After a third quarter in which it fails to meet the minimum requirements for the GLTDF ratio and the requirements for the GLTDF<sub>q</sub> ratio, it must additionally fulfil the second-bucket liquidity ratio.

In the case of each liquidity ratio, the requirement is a value of at least 1.

All corrective measures cease once the bank has met the minimum requirements for the GLTDF ratio at the end of a quarter.

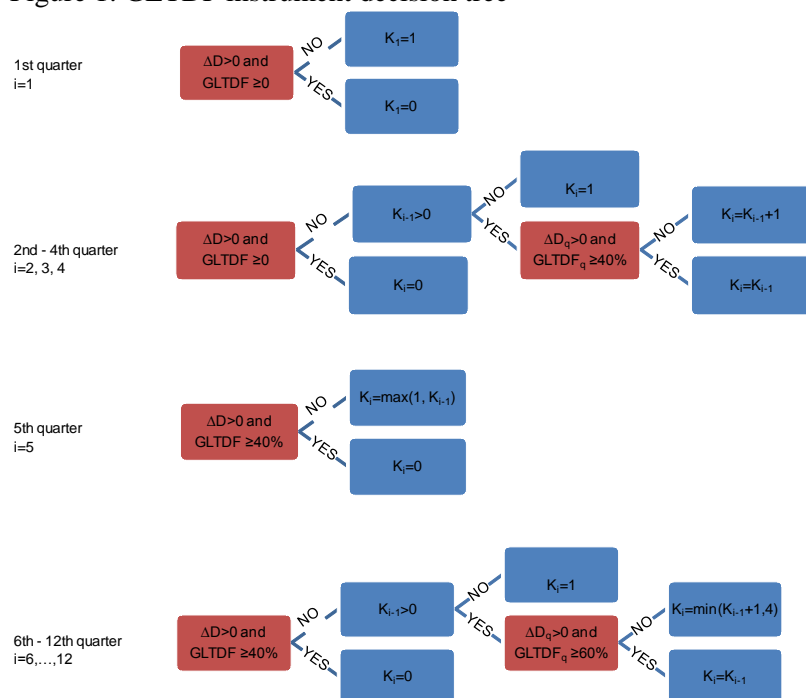
**Exemptions.** The calculation of the GLTDF ratio allows for certain exemptions in order to ensure that slowing down the reduction of the LTD ratio does not prevent banks and enterprises from restructuring and does not limit their scope to diversify and improve their funding. The criteria for fulfilment of the minimum requirements and corrective measures do not take into account the transfer of assets to the Bank Assets Management Company, the transfer of assets and liabilities between banks on the basis of a Bank of Slovenia decision or the derecognition of assets due to irrecoverability, debt to equity swap and securitisation.

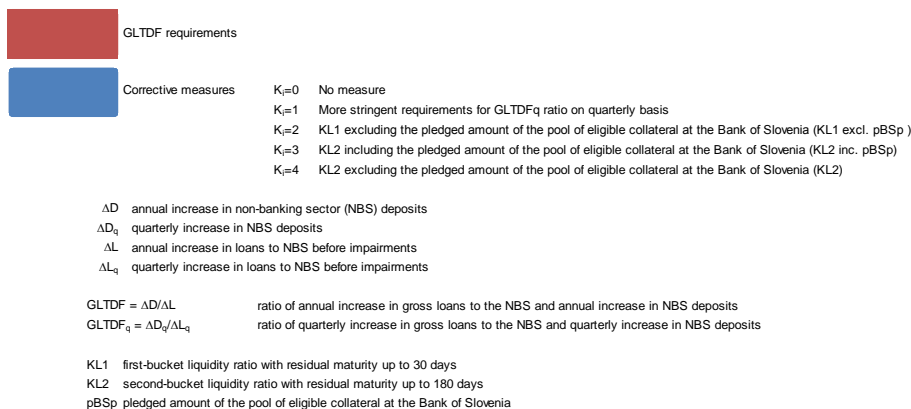
The limits for the GLTDF ratio under the minimum requirements and for the GLTDF<sub>q</sub> ratio under the corrective measures are based on historically observed lowest values and the following considerations:

- GLTDF ratio  $\geq 0\%$ : positive growth in deposits is an appropriate source of funding for credit growth; therefore a bank which reduces its volume of lending despite positive growth in deposits and continues not to fulfil the more stringent requirements of the GLTDF<sub>q</sub> ratio on a quarterly basis is obliged to meet and maintain higher liquidity ratios.
- 40%: in the pre-crisis period beginning in 1999, when capital restrictions on banks' foreign borrowing were abolished, until the end of 2008, the GLTDF ratio of the banking system as a whole and of each bank category (large banks, small banks and banks with majority foreign ownership) was above 40%.
- 60%: since the purpose of the instrument is merely to slow and not to prevent the decline in the LTD ratio, the requirements for the GLTDF ratio must be lower than the LTD ratio. The lowest historical level of the LTD ratio of the banking system was 60%.

Because the instrument is being introduced on a solo basis and applies only to banks in Slovenia, no significant cross-border effects or effects on the single market are expected.

Figure 1: GLTDF instrument decision tree

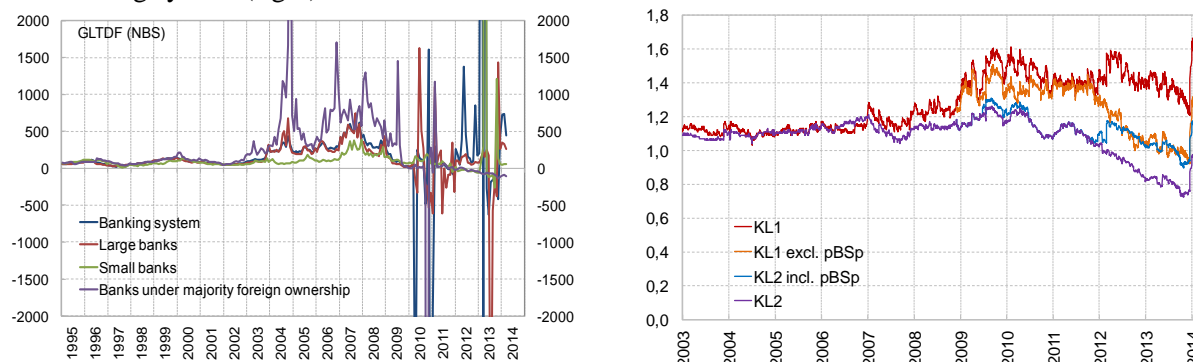




## Instrument's variables: the GLTDF ratio and liquidity ratios

Historically, the GLTDF ratio of the banking system and of individual bank groups was highly stable until the end of 2003. Thereafter its volatility increased, but only with regard to upward movements, both for individual bank groups and for the overall banking system. Starting at the end of 2009, volatility increased further, in both upward and downward directions. The instrument is calibrated in such a way that the volatility of the GLTDF ratio should gradually fall and eventually return to its pre-crisis level.

Figure 2: GLTDF ratios of the banking system and bank groups in percent (left) and liquidity ratios of the banking system (right)



Notes: KL1 is the first-bucket liquidity ratio (residual maturity up to 30 days), KL1 excl. pBSp is the first-bucket liquidity ratio excluding the pledged amount of the pool of eligible collateral at the Bank of Slovenia, KL2 incl. pBSp is the second-bucket liquidity ratio including the pledged amount of the pool of eligible collateral at the Bank of Slovenia, and KL2 is the second-bucket liquidity ratio (residual maturity up to 180 days).

Source: Bank of Slovenia

The first-bucket (KL1) and second-bucket (KL2) liquidity ratios are defined in existing regulation, while for the purposes of the new GLTDF regulation a further two intermediate liquidity ratios (KL1 excl. pBSp and KL2 incl. pBSp) are defined with the aim of a gradual tightening of liquidity requirements. All four liquidity ratios are defined as the ratio of financial assets to liabilities with a residual maturity of up to 30 days in the case of the KL1 ratio and 180 days in the case of KL2. KL1 is a true liquidity ratio with certain similarities to the liquidity coverage ratio (LCR) and is already mandatory under existing regulation. A KL1 ratio of at least 1 (100%) must be achieved, and the requirement is met by all banks and branches of banks. KL2 measures the funding liquidity risk over a six-month horizon and has only an informative role in existing regulation. The gradual tightening in liquidity requirements via the two intermediate ratios (KL1 excl. pBSp and KL2 incl. pBSp) gives banks more time in which to increase their liquidity reserves and additional scope to exit the regime of corrective measures if they meanwhile begin to meet the minimum requirements for the GLTDF ratio.

### III. Developments within the banking system prompting the introduction of the instrument

#### Projected developments in the absence of regulatory action

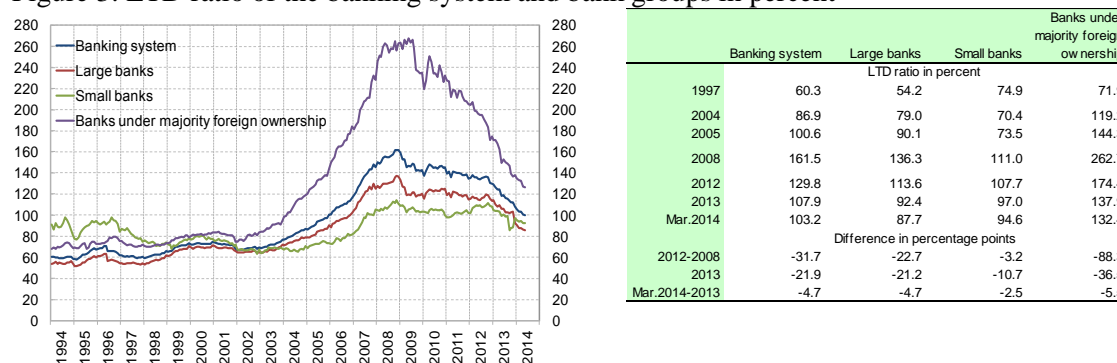
In early 2013 an initial analysis was carried out using data to the end of 2012 to project the situation of the banking sector 3-5 years on, i.e. after 2015, based on banks' behaviour in the absence of regulatory action. The projections assumed a continued contraction of credit along with a constant stock of deposits, while the non-banking sector LTD ratio was assumed to converge to the level of comparable banks within the EU. For domestic banks the LTD ratio was assumed to fall to 100% or to remain at its existing level in the case of banks for which it was already lower than 100% at the end of 2012. The LTD ratio of banks with majority foreign ownership, which have better scope for refinancing, was assumed to decline towards 125%. These assumptions implied that banks' operating volume and stock of loans to the non-banking sector would contract by a further 20% and the stock of wholesale funding by over a third.

In reality the contraction of lending and reduction in the LTD ratio accelerated rapidly in 2013 and early 2014, due partly to one-off events. At the end of the first quarter of 2014 banks' operating volumes were already at the level projected to be reached only after 2015. The LTD ratio of domestic banks was lower than assumed in the analysis, while the rate of decrease of the LTD ratio of banks under majority foreign ownership slowed somewhat in 2014.

#### LTD ratio and movements of balance sheet items

In the four years following its peak at the end of 2008, the overall LTD ratio for the banking system fell by 32 percentage points from 162% to 130% at the end of 2012. In 2013 and the first quarter of 2014 alone it fell by a further 27 points, almost as much as in the four previous years, to 103%. While in previous years it was the LTD ratio of banks under majority foreign ownership that fell fastest, in 2013 the LTD ratio of domestic banks began to decrease more rapidly.

Figure 3: LTD ratio of the banking system and bank groups in percent



Source: Bank of Slovenia

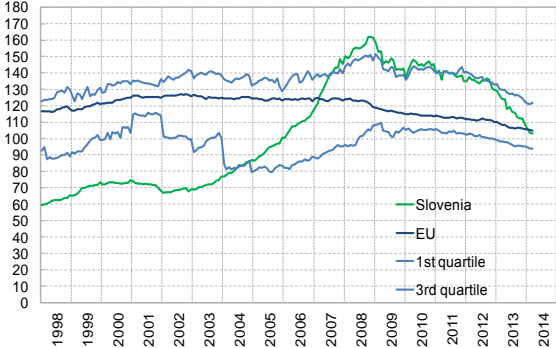
One-off events, the transfer of non-performing assets to the Bank Assets Management Company and a contraction in the operating volume of banks under administrative procedure were significant factors in the decline of the LTD ratio in the past year. Two banks have so far completed the transfer of non-performing assets to the Bank Assets Management Company, which explains 8 percentage points or 30% of the fall in the banking system LTD ratio in the fifteen months from the end of 2012 to the end of March 2014<sup>13</sup>. The group of small banks includes two which have been under administrative procedure since September 2013. However, since these banks have been able to sell off their assets at the same rate as their liabilities have fallen due, they have contributed only 1.5 percentage points to the fall in the LTD ratio for the small banks group in the last 15 months, while other small banks contributed 12 percentage points. Figures for the first quarter of 2014, when there were no further

<sup>13</sup> Or 12 percentage points, i.e. half of the decline of the LTD ratio of large banks in the last 15 months.

transfers of assets from banks, indicate that the decline in the LTD ratio of large and small domestic banks accelerated, while the fall in the LTD ratio of banks under majority foreign ownership slowed to some extent.

Taking account of transfers of non-performing assets of large banks to the Bank Assets Management Company that are expected to take place in the future, the LTD ratio for the banking system will decrease by a further 3 percentage points, bringing the LTD ratio for large banks down to around 82%. The LTD ratio for the banking system is currently at its 2005 level and is set to fall further towards its level of 2004, when Slovenia joined the EU. Excess credit growth occurred following Slovenia’s entry into the EMU in 2007 and 2008. This implies that most of the excess increase in the LTD ratio from the boom period has been eliminated. The LTD ratio of the banking system is currently at the level of the EU average and will continue to fall towards the first quartile of the EU countries LTD distribution, and will therefore be low even by comparison with other countries. Historically the lowest level of the LTD ratio of the banking system was 60%.

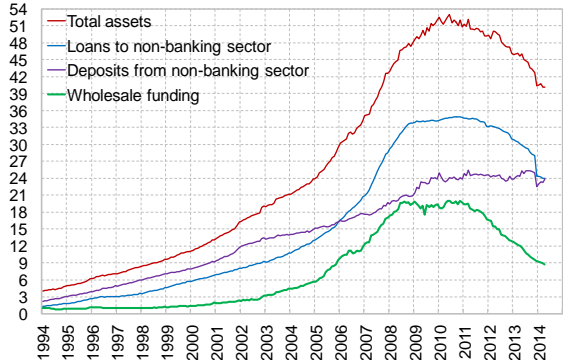
Figure 4: LTD ratio for the banking system of Slovenia and the EU and boundaries of the 1st and 3rd quartiles of the distribution of LTD ratios among EU countries, in percent



Source: Bank of Slovenia, ECB (SDW)

After the end of 2008 the LTD ratio fell primarily due to a major contraction in lending to the non-banking sector. Given limited deposits, banks were able to finance high credit growth during the boom only by increasing their wholesale funding. During the financial crisis, access to financial markets and scope for to refinance wholesale funding were sharply reduced. Banks therefore used other sources of funding as well as loan repayments to repay wholesale funding, at the same time as heavily reducing total assets.

Figure 5: Balance sheet items in EUR billions (left) and decrease relative to peak values (right)



	Peak	Peak value (EUR bn)	Amount Mar. 2014 (EUR bn)	Difference (EUR bn)	Growth rate in % Mar.14/Peak
Total assets	Jun-10	53.0	40.2	-12.8	-24.2%
Loans to non-banking sector	Nov-10	34.9	24.0	-10.9	-31.2%
Deposits from non-banking sector	Mar-11	25.4	23.3	-2.2	-8.6%
Wholesale funding	Jun-10	20.0	8.9	-11.1	-55.4%

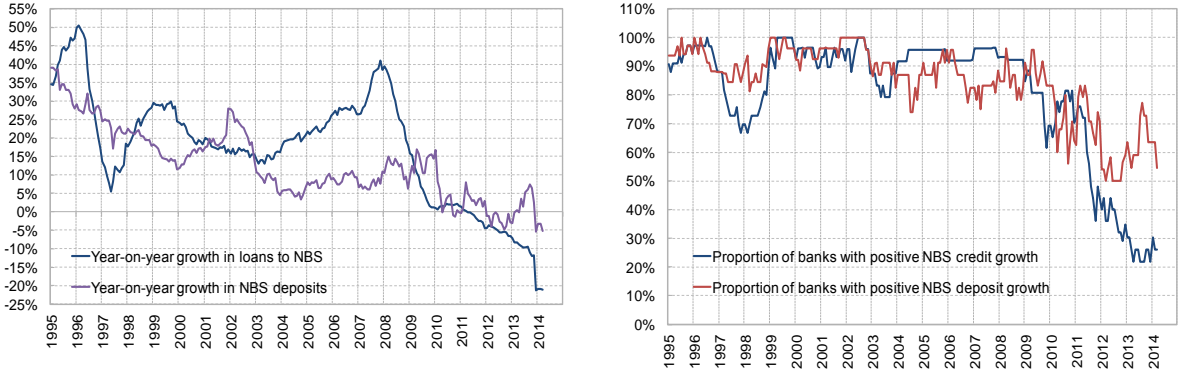
Notes: NBS – non-banking sector, wholesale funding – liabilities to banks and issued bank securities  
Source: Bank of Slovenia

From the peak, which is shown for individual balance sheet items in the table above, until the end of March 2014, the total assets of the banking system after taking account of the transfer of bad assets to the Bank Assets Management Company fell by almost EUR 13 billion or 24% while the stock of loans to the non-banking sector fell by EUR 11 billion or almost a third. The stock of deposits from the non-

banking sector fell by EUR 2.2 billion, although EUR 2.4 billion of this occurred in December 2013 when state deposits were converted into bank equity. In other respects the stock of deposits from the non-banking sector was largely constant throughout the financial crisis. The stock of wholesale funding fell by EUR 11 billion or 55%.

The significant contraction in lending during the financial crisis was observed at many banks due either to lower demand for credit and poorer creditworthiness of customers, or to a reduction in capital requirements and a lower LTD ratio. It also reflects procyclical behaviour on the part of banks, with excessive credit growth during the boom and a credit crunch during recession. Developments on the deposits side were more varied. High deposit interest rates and reduced confidence in banks with a high proportion of non-performing loans caused deposits to migrate between banks. The LTD ratio fell fastest in the case of banks that simultaneously increased their stock of deposits and reduced lending.

Figure 6: Year-on-year growth in non-banking sector loans and deposits (left) and proportion of banks with positive credit and deposit growth (right), in percent

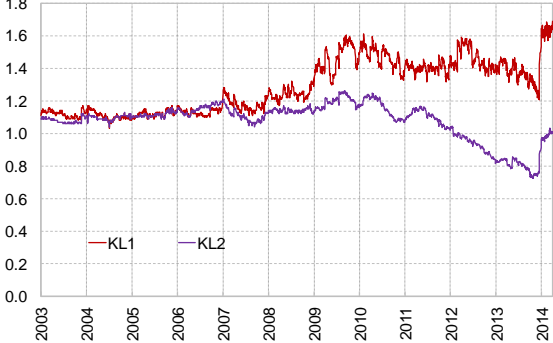


Source: Bank of Slovenia

**Liquidity ratios**

At the outbreak of the financial crisis in Slovenia at the end of 2008, banks sharply increased their first-bucket liquidity ratio (KL1). They maintained high liquidity reserves throughout the financial crisis. The excess above the required value increased further following the exchange of non-performing loans for Bank Assets Management Company bonds. At the end of March 2014 the first-bucket liquidity ratio for the banking system was 1.7%, and thus 70% above the regulatory minimum of 100%.

Figure 7: Liquidity ratios for the banking system



Source: Bank of Slovenia

Movements in the balance sheets had a greater effect on the second-bucket liquidity ratio (KL2), i.e. the ratio of assets to liabilities with a residual maturity of up to 180 days. KL2 reflects greater funding risk and the non-stable funding structure of banks. With limited access to financial markets banks did



not refinance funding liabilities from wholesale funding sources but partly replaced them with growth in deposits, especially sight deposits which shortened the maturity structure of liabilities. They also repaid them with funding from the ECB's long-term refinancing operation which however increased the share of encumbered assets, reducing asset liquidity. A third source of repayments were proceeds from receivables. Since banks did not refinance short-term loans but demanded their repayment, the stock of short-term assets fell and the maturity of assets gradually lengthened, which further contributed to the decline in KL2. KL2 fell by 40% between August 2009 and mid-December 2013. The volume of liabilities with a residual maturity up to 180 days fell by 10%, which is less than the 19% fall in total assets in the same period and significantly less than the fall in financial assets with a residual maturity up to 180 days. The latter fell by 46% due to the contraction in lending and the increase in encumbered assets as the collateral for Eurosystem operations.

### **Systemic risk**

Systemic risk is increased by an accelerated reduction in the LTD ratio based primarily on a contraction in lending, and in particular in case of a simultaneous contraction in lending and increase in the stock of deposits. This is evident in an unstable funding structure of banks and increased structural liquidity risk in bank funding over a longer timeframe of six months. Such conduct by banks reduces access to liquidity by the non-banking sector, which can contribute to a further worsening in the quality of banks' credit portfolios. Impaired financial intermediation process limits revenue generation from banks' core activities, reducing their ability to raise capital from retained earnings.

### **IV. Indicative target range for the LTD ratio of the banking system**

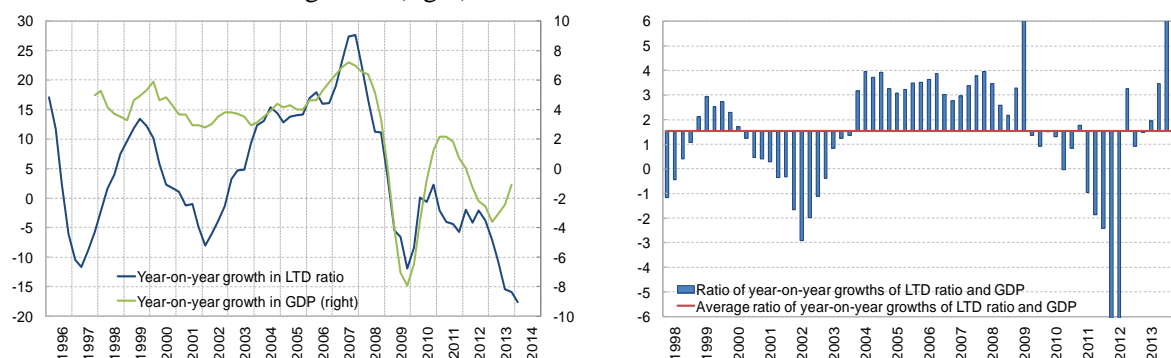
Based on the long-term relationship between growth in the LTD ratio and GDP growth, in 2013 a target range for the LTD ratio of between 105% and 125% was set for the Slovenian banking system.

In view of the procyclical nature of credit growth, which is reflected in growth of the LTD ratio, a long-run average ratio of growth in the LTD ratio to real GDP growth was calculated, which can be interpreted as a measure of financial deepening of the banking system conditional on the volume of non-banking sector deposits available. Three outliers in the relationship were excluded from the calculation of the long-term average. Economic growth was virtually zero in 1) the first quarter of 2009, and 2) the last quarter of 2011 and the first quarter of 2012. Another distinctive period was 3) the year 2013 due to a series of one-off events. First, the Cyprus crisis led to speculation that Slovenia would be the next country to require international monetary assistance. Subsequently, in September, two banks were put under administrative procedure. The last quarter of the year was marked by uncertainty over banks' comprehensive assessment, while the end of the year saw the transfer of non-performing assets to the Bank Assets Management Company and banks recapitalisation.

The long-term average ratio of growths in the LTD ratio and in GDP is 1.6, or in other words the LTD ratio has on average grown 1.6 times as fast as GDP. The most significant deviation from this long-term average was witnessed in the boom years 2004-2008, when the LTD ratio grew four times as fast as GDP. By contrast, in 2001 and 2002 and again after 2009, LTD ratio growth was negative, especially in 2013, due to credit growth lagging behind growth in non-banking sector deposits.

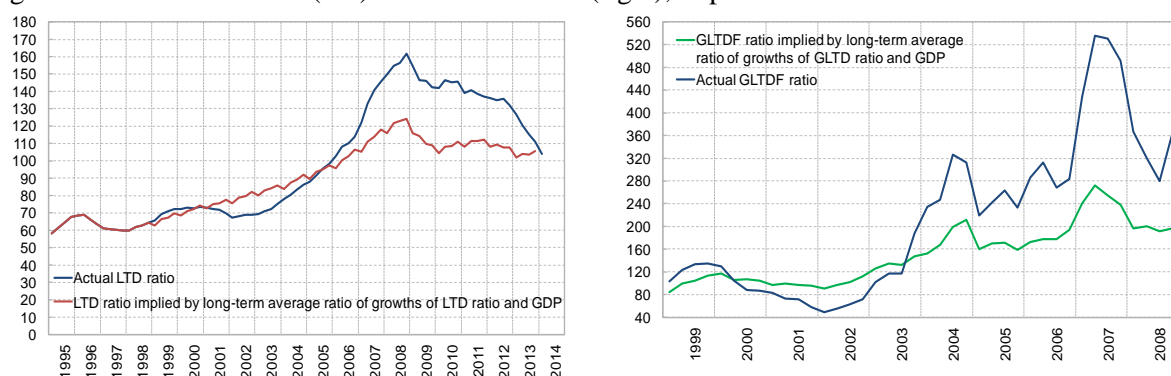
If the ratio of growths in the LTD ratio and GDP had followed its long-term average level from 1999 to the present, the LTD ratio would have peaked in the fourth quarter of 2008 at 124.4% rather than at the actual figure of 161.7%. It would have reached its minimum value at the start of 2007 with a value of 105%. This suggests an indicative target range for the LTD ratio of the banking system of between 105% and 125%, with the upper threshold being the more binding constraint.

Figure 8: Year-on-year growth in the LTD ratio and GDP growth in percent (left), and ratio of growth in the LTD ratio to GDP growth (right)



Source: Bank of Slovenia

Figure 9: Actual ratio and the ratio implied by the long-term average ratio of LTD growth to GDP growth for the LTD ratio (left) and GLTDF ratio (right), in percent



Source: Bank of Slovenia

A comparison of the actual LTD ratio and the ratio implied by the long-term average ratio of the growths of the LTD ratio and GDP also shows that the two series coincided at the start of 2014. This suggests that the LTD ratio is close to the long term sustainable level, consistent with GDP growth and given the assumptions of the calculation. This provides further confirmation of the view expressed earlier that the excessive increase in the LTD ratio from the boom period has largely been eliminated.

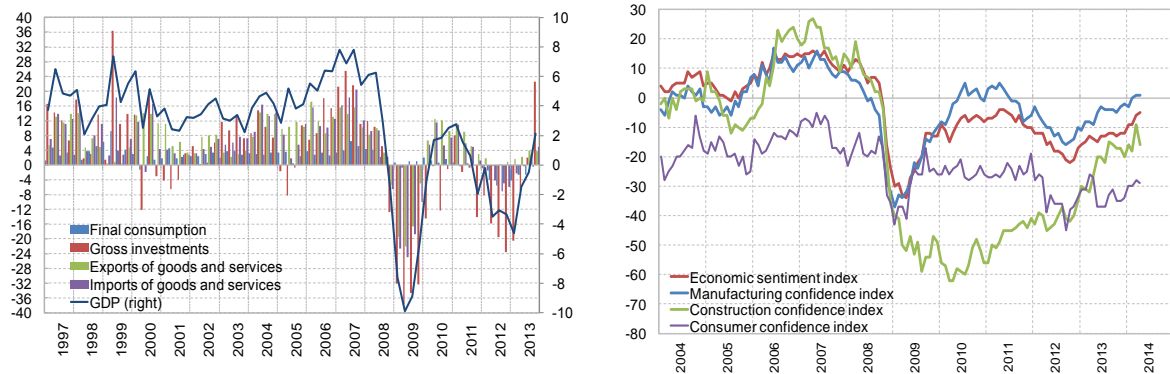
Implied values for the GLTDF ratio can be calculated by applying a similar methodology to gross loans to the non-banking sector (before impairments), taking the long-term average ratio of the growth in the LTD ratio (gross loans) to GDP growth, and using the actual series for non-banking sector deposits. During the pre-crisis period from 1999 to the end of 2008 the GLTDF ratio of the banking system reached a minimum level of 40%, which was used in calibrating the minimum requirements of the regulatory instrument. The implied series suggests that the GLTDF ratio would have reached a minimum of 80% during this period. This value was taken into account in the calibration of the required GLTDFq ratio under the first corrective measure. However, in order for the measure to permit a further reduction in the LTD ratio, the required GLTDF ratio must be lower than the LTD ratio. A limit of 60% for the GLTDFq ratio was therefore adopted, which is the lowest historical level of the LTD ratio for the banking system.

## V. Credit demand and supply

While there is no sign yet of a tailing-off in the rate of credit decline and a return to growth in lending, credit demand indicators have nevertheless improved alongside the turnaround in economic growth. Indicators of the economic climate are improving and have reached the same levels as at the end of 2008 with the exception of the consumer confidence index, which still lags behind. The most positive

confidence index is in manufacturing confidence. Contrary to 2010 and 2011 pick up, construction industry confidence has recovered strongly.

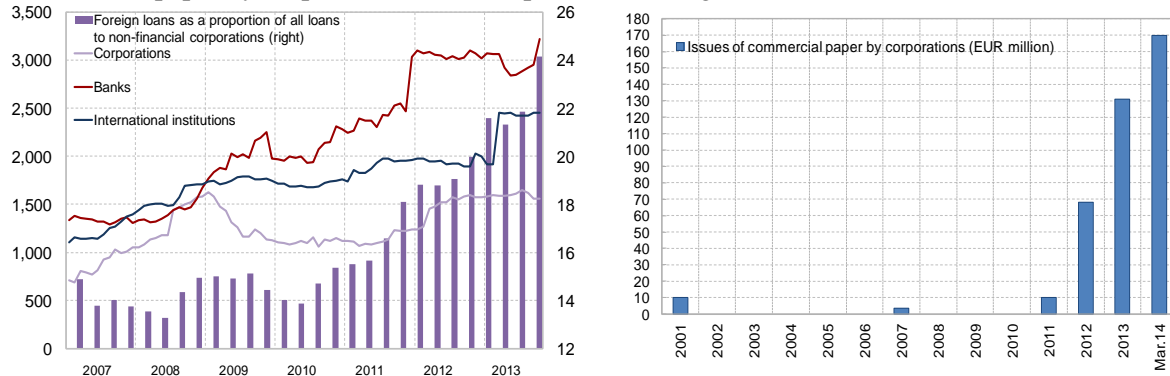
Figure 10: Annual growth of GDP and its components (quarterly year-on-year) in percent (left) and confidence indices (right)



Source: Bank of Slovenia, Statistical Office of the Republic of Slovenia

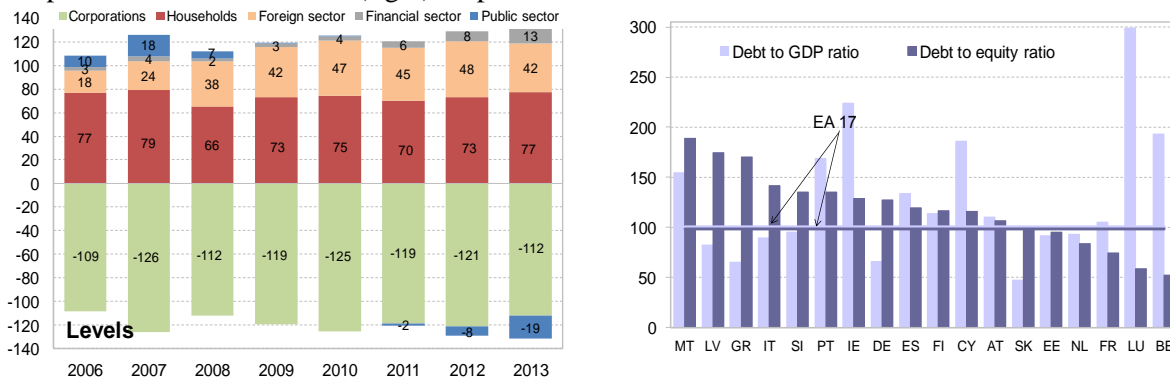
The existence of creditworthy demand for credit is also confirmed by the proportion of foreign loans in total borrowing, which stands at 24% of all loans to non-financial corporations. Borrowing by larger companies through short-term commercial paper on the capital market is another indicator that has strengthened in recent years. In the first quarter of 2014 four major corporations raised EUR 170 million on the capital market.

Figure 11: Volume of foreign loans to corporations by type of foreign creditor (left) and issuance of commercial paper by corporations on the capital market (right), in EUR millions



Source: Bank of Slovenia

Figure 12: Net financial position of economic sectors as a percentage of GDP (left) and comparison of corporate debt levels in 2012 (right), in percent

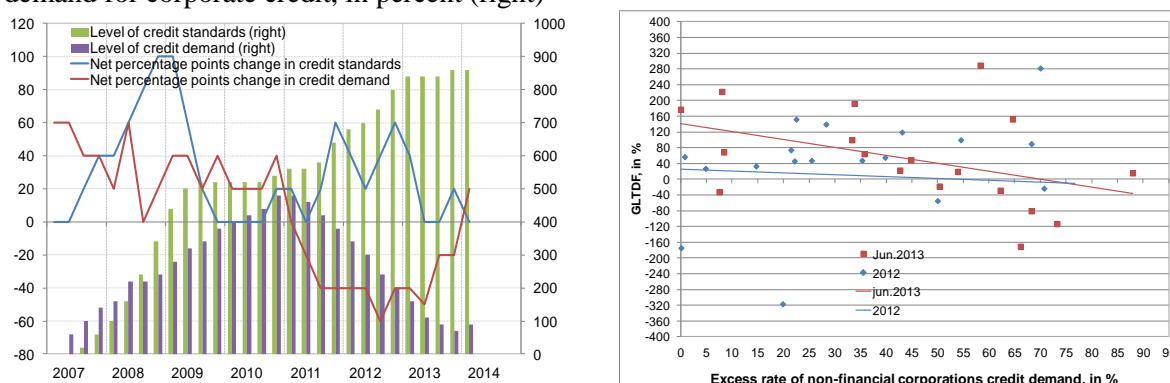


Source: Bank of Slovenia

In 2013 corporations managed to reduce their indebtedness with the result that the net financial position of enterprises towards other sectors stood at 112% of GDP, 9 percentage points less than in 2012 and similar to the level at the end of 2008. Comparison with other EU Member States also shows that Slovenian companies typically have capital shortfalls and hence high leverage, while Slovenia is not out of line with other EU countries in terms of the corporate debt-to-GDP ratio.

Several indicators show that credit supply remains tight. Lending continues to contract despite capital injections to banks. Banks further tightened their credit standards in 2013. The highest rate of unmet excess demand for corporate borrowing is among banks which are reducing their LTD ratio the fastest and whose GLTDF ratio is therefore negative. The negative relationship between excess demand for corporate credit and the GLTDF ratio strengthened in 2013.

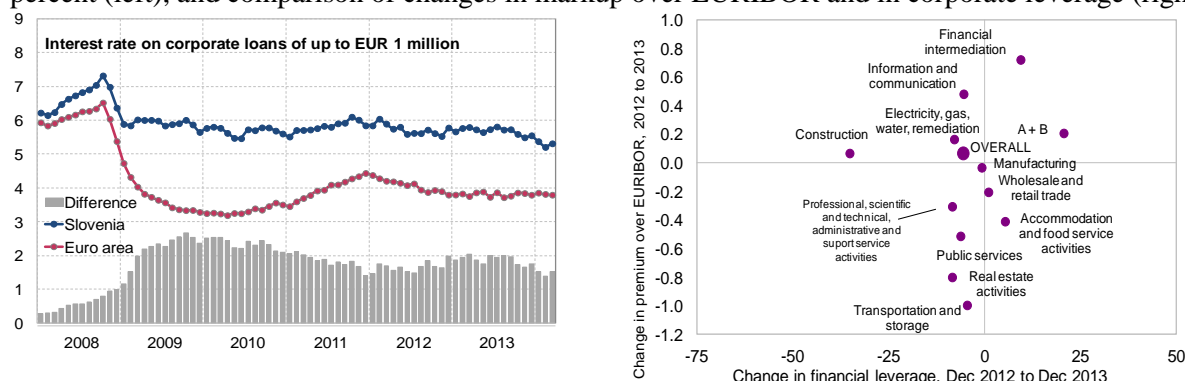
Figure 13: Demand for corporate credit and credit standards (left), and GLTDF ratio and excess demand for corporate credit, in percent (right)



Source: Bank of Slovenia, ECB SDW (Bank Lending Survey)

Corporate borrowing interest rates remain around 1.5 percentage points above the euro area average. The markup over EURIBOR widened in 2013 despite a reduction in corporate leverage.

Figure 14: Comparison of interest rates for corporate borrowing in Slovenia and the euro area, in percent (left), and comparison of changes in markup over EURIBOR and in corporate leverage (right)



Source: Bank of Slovenia

## VI. Expected transmission mechanism of the GLTDF ratio instrument

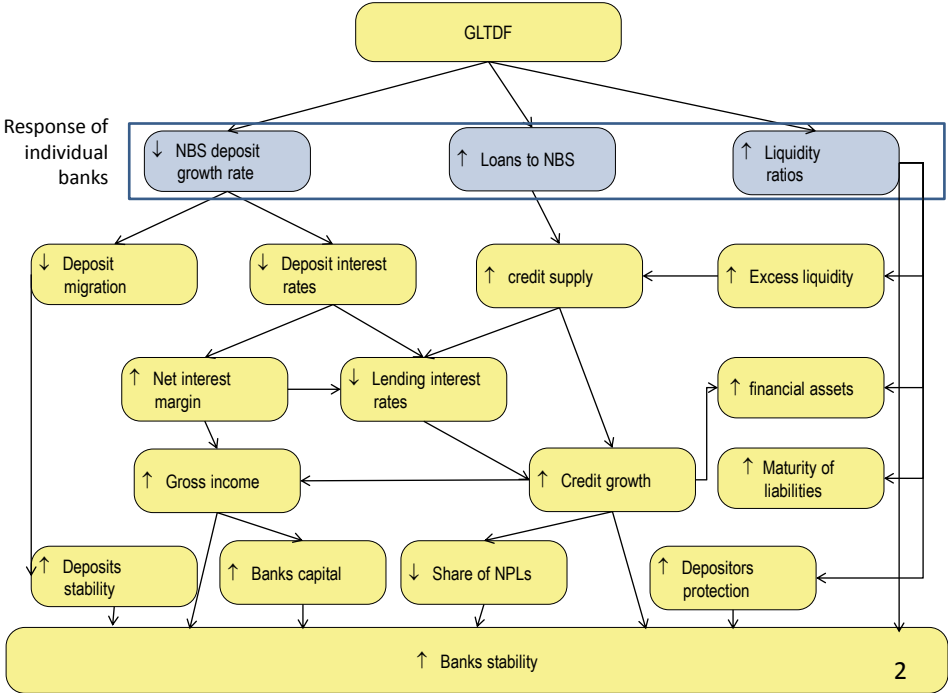
The aim of the GLTDF instrument is to encourage banks to slow the rate of reduction in the non-banking sector LTD ratio or to increase the volume of liquidity buffers.

Banks which fail to meet the GLTDF ratio requirements will have to increase their liquidity ratios, and some will do so as a precautionary measure. Higher liquidity ratios increase bank resilience and

depositor protection. Because of the link between deposit and credit activity, the instrument is expected to enhance the stability of deposits, reduce deposit migration and put downward pressure on deposit interest rates. This would allow banks to improve their interest margins and help bring down lending rates. A more gradual contraction in lending to the non-banking sector would further aid bank stability.

In the longer term, given a more stable and stronger funding structure of banks, lower lending rates, stronger credit demand and improved non-banking sector liquidity, the GLTDF instrument could lead to the decline in lending gradually being reversed and credit growth being restored, and to the proportion of non-performing loans being reduced. Together with improved interest margins, this would enable banks to generate more capital internally through retained earnings and restore long-term sustainability of their business models. This would further enhance banking system stability.

Figure 15: Expected transmission mechanism of the GLTDF instrument



Source: Bank of Slovenia

The GLTDF instrument is defined purely in terms of increments and does not affect banks’ existing portfolios. It supports the process of restructuring of banks and enterprises and does not hinder banks from diversifying their funding, particularly through securitisation and the issuance of covered bonds. It also conforms to ESRB guidelines in relation to the diversification and stabilisation of the funding structure.

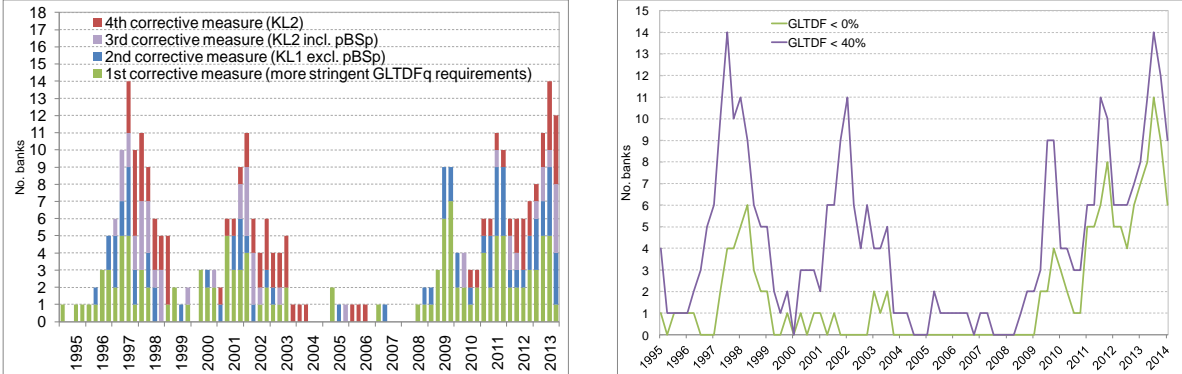
It should be emphasised that the GLTDF instrument does not prompt banks to assume greater credit risk. A bank has a full responsibility and accountability for managing credit risk. Where it assesses the level of risk to be too high or credit demand too low, the measure allows it to fulfil its requirements by increasing its stock of liquid assets. Nevertheless there is a risk that banks with strong growth in deposits might relax their credit standards too much. However, we do not consider this risk to be severe given that the instrument is being introduced as a temporary measure in a situation in which banks are operating in difficult conditions under the lens of rating agencies, foreign institutions and the general public, and subject to closer regulatory scrutiny including a comprehensive review and stress testing at an EU-wide level. The indicative target range for the LTD ratio at the level of the banking system, which also establishes an upper limit for the LTD ratio, will also have a role to play in this respect. At the same time, strict oversight of credit risk is a high priority for the central bank in its on-going prudential supervision of banks.

The corrective measures require a bank with a low financial intermediation to increase its liquid reserves by holding a larger volume of highly liquid assets or assets with a short residual maturity and predictable cash inflow. The GLTDF ratio instrument is being introduced as a temporary measure taking account of banks' current circumstances in which they have a strong liquidity position, with KL1 for the banking system as a whole at a historic high. The purpose of the corrective measures is to ensure that banks with a rapidly falling LTD ratio gradually increase their KL2, which currently has a purely informative role. Like the NSFR, KL2 is an indicator not so much of liquidity risk as of funding risk over a longer horizon. The strengthening of requirements in relation to KL2 contributes to greater stability in banks' funding structure, which is one of the aims of the measure.

The strengthening of liquidity requirements as a corrective measure imposed on banks which fail to meet the minimum GLTDF ratio requirement is also important in terms of the effectiveness of the instrument. Banks monitor and meet liquidity ratios on a daily basis as opposed, for example, to capital adequacy ratios which are examined quarterly. Capital buffers have also to some extent proved ineffective, as banks necessarily have a certain amount of capital in excess of the capital requirements, they attempt to reduce their risk weights, or to obtain additional capital from owners with strong capital backing. In case of Estonia, it failed to stem the growth in housing loans despite increasing the risk weighting on such credit from 50% to 100%<sup>14</sup>. The same applies to Slovenia in the case of bank-financed leveraged buyouts, on which the risk weighting was raised from 100% to 150%.

**VII. Simulations on historical data**

Figure 16: Highest corrective measure and number of banks affected (left), and number of banks which would have failed to meet the minimum requirements (right), by quarter.

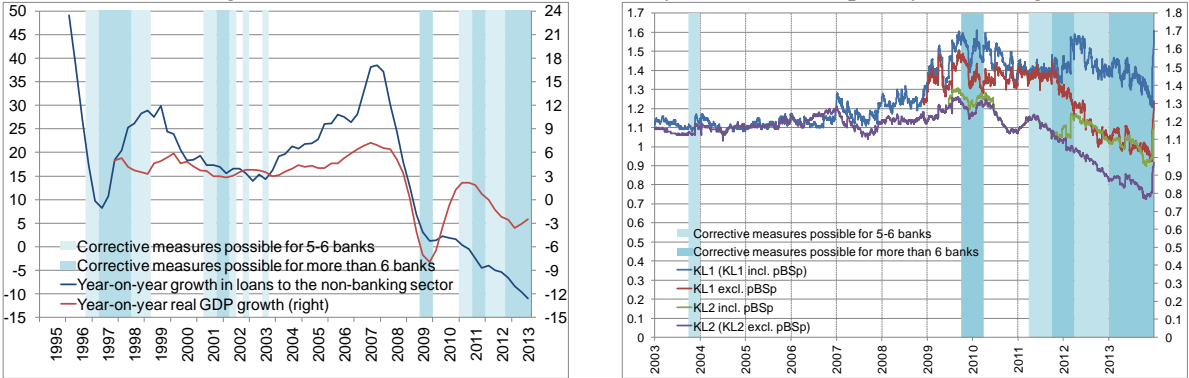


Source: Bank of Slovenia

A simulation exercise using historical data from banks demonstrates the countercyclical nature of the instrument. The effect on each bank of introducing the instrument in each individual quarter was tested and the rules for corrective measures were applied if the bank did not meet the minimum requirements. The figure shows the highest possible corrective measure that a bank would have faced and the number of banks thus affected at the end of each quarter. The GLTDF ratio instrument can be seen to be triggered mainly in periods of difficult economic conditions when economic and credit growth were low or negative, namely 1997-1998, 2001-2002 and 2009-2013. This would have encouraged banks to curb the rate of credit contraction and/or boost their liquid assets and hence their liquidity ratios. In the absence of an upper limit on the GLTDF ratio, the measure would have had no effect in the boom period.

<sup>14</sup>[http://www.esrb.europa.eu/pub/pdf/other/140521\\_Notification\\_Estonia\\_SRB.pdf?66848661e6bc57df1e2914ab50c5548a](http://www.esrb.europa.eu/pub/pdf/other/140521_Notification_Estonia_SRB.pdf?66848661e6bc57df1e2914ab50c5548a)

Figure 17: Comparison of periods when a corrective measure would have applied to 5 or 6 or to more than 6 banks, with growth in credit and economic activity<sup>15</sup> (left), and liquidity ratios (right).



Source: Bank of Slovenia

### VIII. Conclusion

Macro-prudential instruments are usually defined for the boom phase of the cycle, during which they curb the build-up of systemic risk and establish capital buffers that are released as the credit cycle turns down. The role of macro-prudential policy in a prolonged recession, when buffers to prevent the build-up of systemic risk are either exhausted or have yet to be established, remains an issue.

A rapid decline in the LTD ratio of a large number of banks along with an increase in deposits and a contraction in lending constitutes a systemic risk which can have adverse effects on the banking system and the real economy. It is reflected in higher funding risk of the banks in the longer-term perspective. It reduces the liquidity of the non-banking sector, which can in turn cause the quality of banks' lending portfolios to further worsen. Additional pressure on net interest income earnings limits the scope for banks to operate profitably and to generate capital from retained earnings.

The paper has presented a macro-prudential instrument, that places a floor on the rate of decrease in the LTD ratio. The instrument lays down minimum requirements for the GLTDF ratio (gross loans to deposits flows ratio) for banks with positive growth in non-banking sector deposits. It requires non-compliant banks to establish or retain higher liquidity buffers contributing to instrument's effectiveness and increase protection of depositors. The overall package also incorporates an indicative target range for the LTD ratio of the banking system in which the upper limit is the more binding constraint, and which prevents an overly rapid increase in credit growth and financial leverage. The purpose of the instrument is not to ensure that the LTD ratio falls within the indicative range or to prevent further decline in the LTD ratio. It is calibrated in such a way as to permit further decline in the LTD ratio while moderating the rate of decrease.

The instrument curbs procyclical behaviour of banks and promotes a sustainable long-term contribution of the financial sector to the economy and functioning financial intermediation. In a period of prolonged recession and contraction in lending, the GLTDF instrument preserves an active role for macro-prudential policy even when buffers have already been released or not yet formed.

<sup>15</sup> Comparisons before 1999 are not fully valid since capital restrictions were then in place, and data from this period were therefore not used in setting the instrument. In this period, banks' LTD ratio was very low and rather constant at around 60%, as was the GLTDF ratio which was around 40% of the minimum requirement. There were also more banks in operation: 27 as opposed to 22 in 2013.

## Resources

1. European Systemic Risk Board, ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector, March 2014.
2. BIS, Committee on the Global Financial System, Operationalising the selection and application of macroprudential instruments, CGFS Publications, No 48, December 2012.
3. European Systemic Risk Board, Recommendation of the ESRB of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1).
4. European Systemic Risk Board, Recommendation of the ESRB of 20 December 2012 on funding of credit institutions (ESRB/2012/2).
5. European Systemic Risk Board, Recommendation of the ESRB of 22 December 2011 on the macro-prudential mandate of national authorities (ESRB/2011/3).
6. Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing 2006/48/EC and 2006/49/EC.
7. 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.
8. 32013R1024: Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.
9. Reserve Bank of New Zealand, Liquidity Policy, Document BS13, March 2011.
10. Central Bank of Ireland, The Financial Measures Programme Report, March 2011.
11. Banco de Portugal, Financial Stability Report, Box 1.2: Structural adjustments of the credit to deposits ratio in the funding and capital plans of the eight major Portuguese banking groups, p. 25, November 2011.
12. Financial Market Authority, Supervisory guideline to strengthen the sustainability of the business models of large internationally active Austrian banks, 14.3.2012.
13. Narodna banka Slovenska, Recommendation No 1/2012 of the Financial Market Supervision Unit of Národná banka Slovenska of 16 January 2012 on supporting the stability of the banking sector.
14. Choongsoo Kim, Macroprudential policies in Korea, Key measures and experiences, Banque de France Financial Stability Review, No. 18, April 2014.
15. Saudi Arabia: Financial System Stability Assessment—Update, IMF Country Report, No. 12/92, April 2012.
16. Fitch Ratings: China Tightens Bank Liquidity Rules, but Risks Remain, 26.2.2014
17. Board of Governors of the Federal Reserve System, Section 109 Host State Loan-to-Deposit Ratios, 1.7.2013
18. PwC, The Report, Indonesia 2012, p. 61,
19. Esti Pank, Systemic risk buffer; Background analysis for the implementation of the Systemic Risk Buffer as a macro-prudential measure in Estonia, May 2014.