

## **Republic of Lithuania: Financial System Stability Assessment—Update**

This update to the Financial System Stability Assessment on the Republic of Lithuania was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on April 1, 2008. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of the Republic of Lithuania or the Executive Board of the IMF.

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REPUBLIC OF LITHUANIA

**Financial System Stability Assessment Update**

Prepared by the Monetary and Capital Markets and European Departments

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April 1, 2008

This report presents the conclusions of the IMF Financial Sector Assessment Program (FSAP) Update mission, which visited Lithuania in November 2007. The FSAP findings and recommendations were discussed with the authorities during the Article IV Consultation mission in February 2008.

The FSAP team comprised May Khamis (Mission Chief, IMF), Sophie Sirtaine (Deputy Mission Chief, World Bank), Luc Laeven, Thordur Olafsson, Miguel Segoviano (all IMF), Olivier Hassler, Michel Noel, Adolfo Rouillon, and Heinz Rudolph (all World Bank); and Jan Rein Pruntel (formerly De Nederlandsche Bank). Cristina Velazco-Weiss (World Bank) assisted the mission. The mission received excellent cooperation and support from the authorities. The main findings of the FSAP are:

- The dependence of the banking sector on foreign financing coupled with increasing macroeconomic imbalances render it vulnerable to regional and global disturbances. Additionally, the loan portfolios of Lithuanian banks are sensitive to the domestic economic cycle and euro interest rates, particularly given the significant concentration in real estate-related lending.
- The BoL is to be commended for measures over the past few years to encourage prudent credit risk management and strengthen bank capital. Although stress test results indicate that the banking system is reasonably resilient to macroeconomic shocks, existing capital might not be sufficient to cope with extreme events and higher buffers would be advisable.
- Given limitations of lender-of-last-resort operations under the currency board, contingency planning for emergency liquidity support under crisis conditions should be further discussed with banks, parent banks, and authorities of foreign banks.
- The regulatory and supervisory frameworks for banks are in line with international standards. Supervision is effective, yet the dominance of foreign banks poses challenges with respect to cross-border issues and linkages, and requires continued close cooperation with the home supervisors.
- Supervision needs to be strengthened in the non-bank financial sector, given the rapid growth of assets and the increasing sophistication of financial institutions.

The main authors of this report is May Khamis, with contributions from the rest of the FSAP update team.

*FSAPs are designed to assess the stability of the financial system as a whole and not that of individual institutions. They have been developed to help countries identify and remedy weaknesses in their financial sector structure, thereby enhancing their resilience to macroeconomic shocks and cross-border contagion. FSAPs do not cover risks that are specific to individual institutions such as asset quality, operational or legal risks, or fraud.*

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**GLOSSARY**

A IPTS	Association of Intermediaries of Public Trading in Securities
AMA	Advanced Measurement Approaches
AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
BCP	Basel Core Principles for Effective Banking Supervision
BoL	Bank of Lithuania
CAR	Capital Adequacy Ratio
CBA	Currency Board Arrangement
CEO	Chief Executive Officer
CPI	Consumer Price Index
DIF	Deposit and Investment Insurance Fund
EC	European Commission
ECB	European Central Bank
EMU	European Monetary Union
ERM	European Exchange Rate Mechanism
EU	European Union
FI	Finansinspektionen (the Swedish Financial Supervisory Authority)
EVCA	European Venture Capital Association
FSAP	Financial Sector Assessment Program
FSI	Financial Soundness Indicators
FSSA	Financial System Stability Assessment
IFRS	International Financial Reporting Standards
IOSCO	International Organization of Securities Organizations
IRB	Internal Ratings-Based
ISC	Insurance Supervisory Commission
IT	Information Technology
LoLR	Lender-of-last-resort
LSC	Lithuanian Securities Commission
LTL	Lithuanian litas
LTV	Loan-to-Value
MiFID	Market in Financial Instruments Directive
MoF	Ministry of Finance
MoU	Memorandum of Understanding
MTF	Multilateral Trading Facility
NBFI	Non-Bank Financial Institution
NPL	Non-Performing Loan
OTC	over-the-counter
PFI	Private Finance Initiative
PD	Probability of Default
PPP	Public-Private Partnership
RAS	Risk Assessment System

RoA	Return on Assets
RoE	Return on Equity
ROSC	Report on the Observance of Standards and Codes
RWA	Risk-Weighted Assets
S&P	Standard & Poor's
SMART	First North's Suspicious Transactions Detection System
SME	Small- and Medium-Sized Enterprises
SODRA	State Social Insurance Board
SPV	Special Purpose Vehicles
SREP	Supervisory Review and Evaluation Process
SRO	Self-Regulated Organization
TRS	Transaction Reporting System
UCITS	Undertaking for Collective Investment in Transferable Securities

## EXECUTIVE SUMMARY

**Lithuania's catch-up, in terms of per capita income, toward the European average has been impressive.** This success, however, has been coupled with the emergence of macroeconomic imbalances, accompanied by a significant rise in credit growth, a more than tripling in real estate prices, and an increased dependence on foreign parent banks' funding. Helpfully, credit growth has slowed since mid-2006, as a result of the tightening of credit standards by banks.

**Lithuania's dependence on foreign financing coupled with its macroeconomic imbalances leaves it vulnerable.** The dominance of foreign-owned banks in the banking system constitutes both a source of strength and a risk. Although the foreign banks are highly rated, these ownership linkages increase regional and global contagion risks, especially against the backdrop of the recent global turmoil in financial markets.

**Loan portfolios of Lithuanian banks are sensitive to the domestic economic cycle.** The large share of loans contracted with variable interest rates and in euro increases credit risk related to domestic and foreign interest rate and exchange rate changes, since borrowers are not hedged. Also, the concentration of real estate loans in banks' loan portfolios increases banks' vulnerability to a reversal in real estate prices.

**Although stress tests indicate that the banking system is reasonably resilient to macroeconomic shocks, existing capital buffers might not be sufficient to cope with low probability extreme events and strengthening capital would be advisable.** The BoL is to be commended on measures over the past few years to encourage prudent credit risk management and strengthen bank capital. However, in view of the risk characteristics of Lithuanian banks' loan portfolios and the limited historical data available to gauge default probabilities, there is a significant risk that the standardized and the advanced approaches under Basel II might not adequately capture loan portfolio risks. In the upcoming process of validating banks' Internal Ratings-Based (IRB) models, the BoL should ensure that banks capture risks adequately in their models; otherwise, capital surcharges should be assessed, as needed. This becomes particularly important in view of the riskier external environment.

**Banks' liquidity positions also might not be sufficient to cope with systemic shocks involving a combination of low probability severe events.** Given that the BoL's lender-of-last-resort (LoLR) operations are limited by the Currency Board Arrangement (CBA), the BoL should further discuss liquidity contingency plans with banks, parent banks, and authorities of foreign banks. Also, in view of the current external environment, contingency planning for emergency liquidity support should take priority in cross-border exercises and discussions. The BoL should also update its internal procedures for emergency liquidity support.

**Other aspects of crisis management and preparedness are largely in place and efforts to strengthen cross-border and domestic crisis management are ongoing.** Banks' insolvency and resolution frameworks are largely adequate, and Lithuania has made significant progress in

the field of creditor rights legislation and related institutions. Crisis management arrangements are, however, still untested, and the capacity of the system to handle large amounts of collateral executions and corporate insolvencies in case of crisis would be enhanced by making restructuring procedures more flexible and encouraging the specialization of some judges.

**The banking sector regulatory and supervisory framework is in line with international standards.** The BoL conducts effective on-site and off-site supervision on all banks operating in Lithuania. In the context of Lithuania's accession to the EU, laws and regulations affecting banking supervision have been modified to conform to EU Directives. Yet, the dominance of foreign banks presents challenges with respect to cross-border issues and linkages, and requires continued close cooperation with the home supervisors.

**The regulatory framework for non-bank financial institutions (NBFIs) is now largely in conformity with European Union (EU) Directives.** This progress is counterbalanced by high staff turnover at Lithuanian Securities Commission (LSC), affecting the capacity of LSC to effectively supervise securities markets, and may lead to a breach of implementation of several EU Directives. To redress this situation, the status of LSC must be amended to enable it to pay market-based salaries to its staff, and provide it with an adequate and stable source of funding, including fees from market participants. The regulatory and enforcement framework for insider trading should also be reformed.

**In 2003, the government implemented a successful pension reform establishing an innovative second pillar.** However, the supervision of second pillar pension funds requires closer coordination between the Insurance Supervisory Commission (ISC) and LSC, and the governance structure of pension funds managed by banks and insurance companies should be strengthened to avoid conflicts of interest. As these aspects largely escape oversight due to multiple pension sector supervisors, the overall financial sector supervisory structure should be enhanced to take into account cross-sectoral linkages. The mission welcomes the authorities' ongoing work in this area.

Appendix I provides a summary of the main recommendations of the report. Priority recommendations are listed in Table 1. Appendix II follows up on the status of implementation of the 2002 FSAP recommendations.

**Table 1. Priority Recommendations**

	<b>Timeframe</b>
<b>Banking sector</b>	
<ul style="list-style-type: none"> <li>In the process of IRB model validation under Basel II, ensure that banks' internal model capture the risk characteristics of the Lithuanian loan portfolios adequately. Otherwise, assess capital surcharges under Pillar 2 of Basel II, as needed, based on banks' individual risks not captured under Pillar 1</li> </ul>	Short term
<ul style="list-style-type: none"> <li>Discuss further with banks, parent banks, and the home authorities contingency liquidity plans in case of a severe liquidity stress event</li> </ul>	Immediate
<b>Safety nets: LoLR</b>	
<ul style="list-style-type: none"> <li>Update procedures for emergency liquidity support in case of crisis situations and consider including guidelines for collateral valuation and approval to ensure an expedited process in emergency conditions</li> </ul>	Immediate
<b>Securities markets regulation and supervision</b>	
<ul style="list-style-type: none"> <li>Modify status of LSC to enable it to pay market-based salaries to its staff and to have access to an adequate and sustainable source of funding, including fees from market participants</li> </ul>	Short term
<ul style="list-style-type: none"> <li>Reform the regulatory and enforcement framework for insider trading by: <ul style="list-style-type: none"> <li>✓ Requiring companies to disclose their ultimate controllers as part of their listing application, and to disclose any change in ultimate controllership following their listing</li> <li>✓ Requiring brokers to communicate black lists to LSC</li> <li>✓ Revising the Criminal code to exclude information shared by insiders with third parties from the concept of publicly known information</li> </ul> </li> </ul>	Immediate
<b>Pension sector</b>	
<ul style="list-style-type: none"> <li>Prepare a new complete regulation on the corporate governance and internal control systems for pension fund managers and enforce it</li> </ul>	Immediate
<b>Cross-sectoral issues</b>	
<ul style="list-style-type: none"> <li>Improve supervisory structure to take into account cross-sectoral linkages, particularly those arising as a result of pension fund supervision by multiple supervisors</li> </ul>	Immediate

## I. MACROECONOMIC ENVIRONMENT AND RISKS

1. **Lithuania's catch-up, in terms of per capita income, toward the European average has been impressive, although macroeconomic imbalances have appeared (Table 2 and Appendix III).** Inflation has been on the rise and the external deficit widened. Whereas in the early 2000s the external deficit was financed predominantly by net foreign direct investment, this represented only about a third of the 2007 deficit, with external borrowing making up much of the difference. Lithuania has been participating in the exchange rate mechanism, ERM II, with a CBA.

**Table 2. Lithuania: Select Macroeconomic Indicators**  
(In percent)

	2002	2003	2004	2005	2006	Est. 2007
Real GDP growth	6.9	10.3	7.3	7.9	7.7	8.8
General government fiscal balance 1/	-1.9	-1.4	-2.7	-1.3	-1.5	-1.9
Average CPI (year-on-year change)	0.3	-1.1	1.2	2.7	3.8	5.8
Current account balance (as share of GDP)	-5.2	-6.9	-7.7	-7.1	-10.8	-13.0
Gross external debt (as share of GDP)	43.9	44.9	47.3	49.3	64.1	65.8
Short-term debt (at original maturity, as share of GDP)	...	17.7	16.7	18.9	19.1	17.1
Reserve cover of short-term debt at remaining maturity	...	0.7	0.5	0.6	0.6	0.6

Source: Lithuanian authorities; and staff estimates.

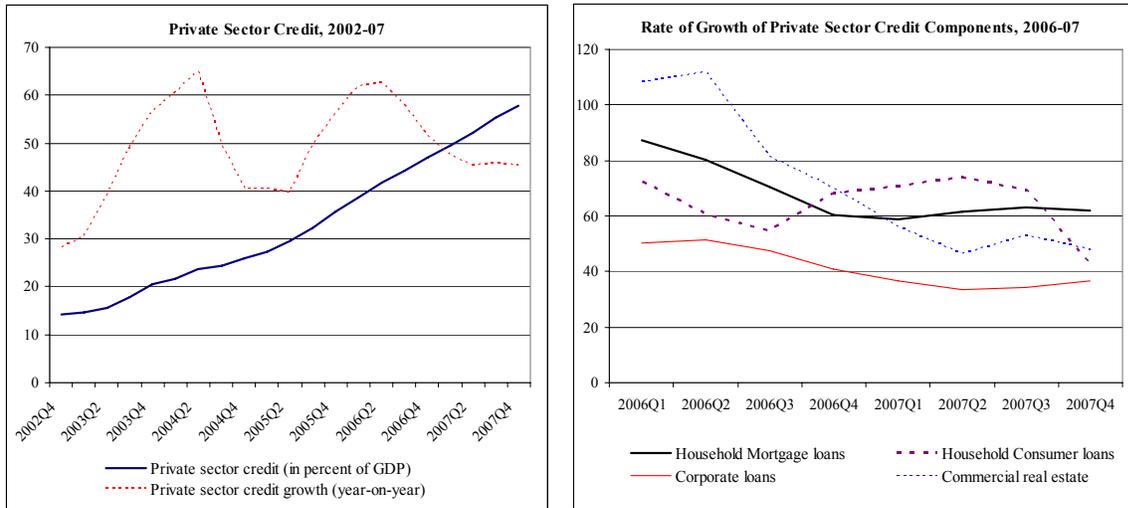
1/ Including restitution payments.

2. **Rising external and internal imbalances have led to downgrades of Lithuania's credit rating by international credit ratings agencies.** Fitch changed its outlook for Lithuania from stable to negative in December 2007 reflecting rising inflationary pressures, a further prospective delay to euro adoption, a marked deterioration in Lithuania's external imbalances, and uncertainty over how the country will secure a gradual adjustment to a more sustainable growth path. In January 2008, S&P lowered Lithuania's rating from A to A- with a negative outlook.

3. **Credit growth has been significant since 2002 but more recently has shown signs of slowing.** Credit grew during the period 2002-08 at an average annual rate close to 50 percent (Figure 1). Reflecting concerns about rapid credit growth, the BoL and the parent banks of major Lithuania banks encouraged a tightening of lending standards, including more conservative valuation of collateral. As a result, year-on-year credit growth eased in 2007, and the month-on-

month rate fell sharply in January 2008. This slowdown seem to also reflect a recent negative sentiment in the real estate market.<sup>1</sup>

**Figure 1. Lithuania: Private Sector Credit Growth, 2002–07**  
(In percent)



4. **Foreign parents continue to finance a significant proportion of banks' lending.** The banking sector is dominated by foreign banks (comprising 85 percent of the sector's assets), the majority of which are Swedish banks accounting for 61 percent of total assets (Appendix IV). Overall, foreign borrowing financed around half of the net new lending in 2006 and around three-quarters in 2007,<sup>2</sup> of which parent banks contributed the majority (Figure 2). Non-parent financing, although relatively small, could pose some refinancing risks for a few smaller banks that depend on this source of funds.

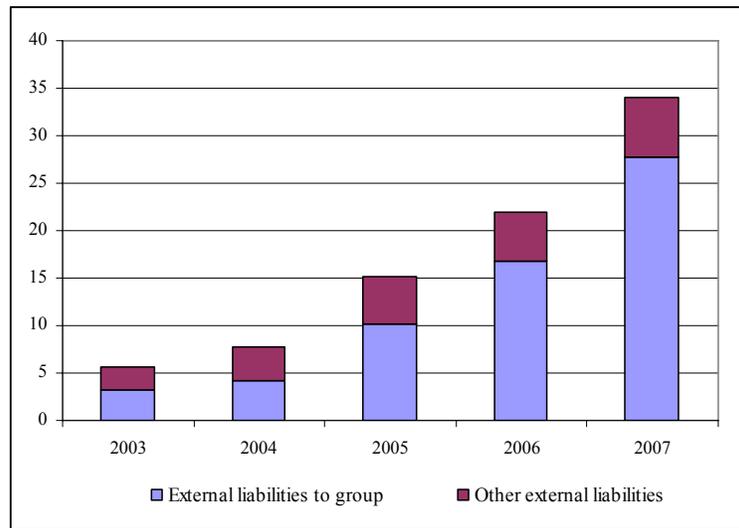
5. **The fact that systemically important banks are owned by reputable foreign banks lends confidence in the resiliency of the banking sector.** Parents of the major Lithuanian banks are highly rated and their Lithuanian subsidiaries have benefited from strong support in terms of funding and capitalization.<sup>3</sup>

<sup>1</sup> Following several years of rapid house price appreciation, the housing market is now cooling, with house prices in Vilnius no longer rising and the volume of house sales declining.

<sup>2</sup> This refers to all banks' foreign liabilities, both wholesale and retail (i.e., non-resident deposits).

<sup>3</sup> In its March 2007 Bank Systemic Risk Report, abstracting from potential parent or government support, Fitch gave Lithuanian banking system an D rating (on a scale of A to E, with A being the highest), but gave the highest rating for parent bank support.

**Figure 2. Lithuania: Banks' External Liabilities, 2003–07**  
(In billions of litas)



6. **At the same time Lithuania's dependence on foreign financing renders it more vulnerable to spillover, both from the rest of the region and from global developments.** Spillover effects could manifest themselves in the form of a downgrading of Lithuania's sovereign rating, higher funding costs, and/or a reduction or even drying up of new lending by parent banks (i.e., refinancing risk). Recent turbulence in international credit markets has already brought the mortgage markets in the Baltics (and in other Central and Eastern European countries) under increasing scrutiny from lenders.<sup>4</sup> Additionally, the dominance of Scandinavian banks in Lithuania implies significant and concentrated regional contagion risks across the region.

7. **Rapid credit growth in recent years has increased credit risk.** This is reflected by: (i) the rapidly rising indebtedness of households and enterprises; (ii) the significant concentration of loans in real estate;<sup>5</sup> (iii) the high share of variable interest rate household mortgage debt—over 90 percent most commonly with 6-month intervals;<sup>6</sup> and (iv) close to 40 percent of

<sup>4</sup> In its recent Financial Stability Report, the Swedish Riksbank voiced concerns regarding Swedish banks' exposures to the Baltics.

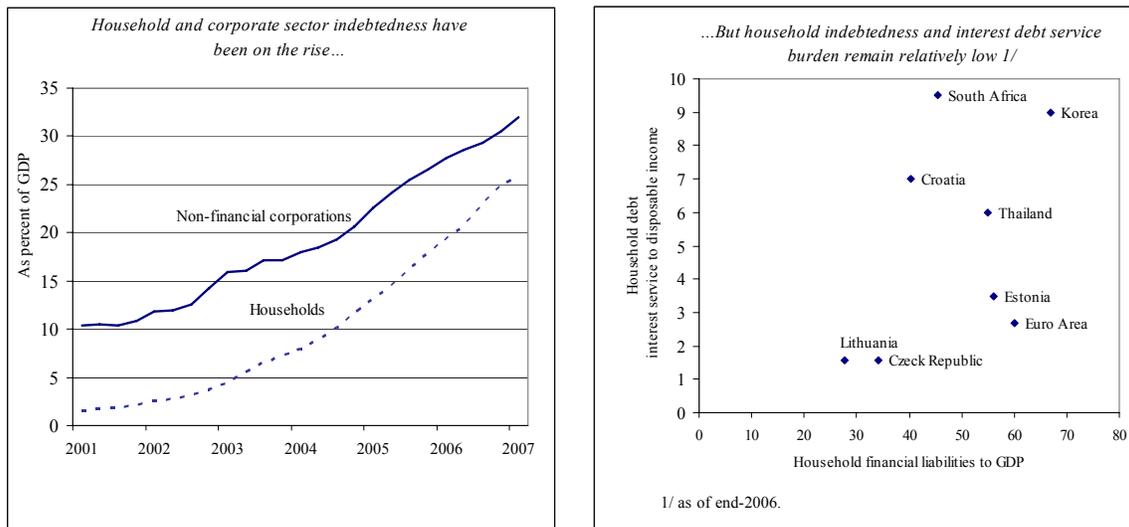
<sup>5</sup> On average, exposures to the real estate sector is around 50 percent of banks' total loan portfolios, of which, around 30 percent is to the household sector.

<sup>6</sup> However, the share of fixed rate loans in new loans have been on the rise in recent years.

household loans and 50 percent of total loans are in euro, and are not hedged by borrowers.<sup>7</sup> While the euro exposures are less worrisome given the CBA, it remains a potential source of vulnerability pending euro area accession.

8. **The above concerns are partially mitigated, but not eliminated, by a number of factors.** Notwithstanding rising household indebtedness, the share of indebted households is still low, and this household segment tends to have higher income and wealth margins to service debt. Higher indebtedness has also been associated with increased loan maturity, which moderates the debt service burden of borrowers (Figure 3).<sup>8</sup> The relative strength of mortgage lending also helps diversify banks' portfolios away from corporate loans, which are typically more vulnerable to the business cycle.

**Figure 3. Lithuania: Household and Corporate Sector Indebtedness**  
(In percent)



9. **Real estate price appreciation seems to have largely reflected fundamental developments, although a correction cannot be ruled out.** Between 2003 and 2006, housing prices tripled nationwide, reaching levels similar to the Riga and Tallinn markets. However, the supply of dwellings has reportedly been limited by land restitution issues, urban planning insufficiencies, lack of resources for infrastructure investments, and institutional inadequacies;

<sup>7</sup> Most foreign exchange loans are in euros with very little lending in other foreign currencies. Consumer loans do not pose risks at this stage given their small size (6.5 percent of total lending).

<sup>8</sup> The majority of mortgage loans have a maturity of more than ten years and, in recent years, the typical maturity of new mortgages has been 20–25 years.

and the production of new dwellings, although increasing, remains below the estimated level of needs.<sup>9</sup> At the same time, the system for registering property and security rights is efficient and mortgage enforcement is expedient, enhancing the capacity of the financial system to adjust to a potential real estate market downturn. An additional risk mitigating factor is provided by the state mortgage insurance.<sup>10</sup> The latter's capitalization seems adequate compared to current claim levels and in comparison with similar funds abroad, although the concentration of the portfolio makes the scheme sensitive to systemic risk.

10. **Lithuania's small non-bank financial sector does not create systemic concern, although leasing and pension funds are growing rapidly.** The local bond market is limited as the government has opted to develop and support benchmarks on the sovereign Euro-bond market. Leasing companies accounted for about 11 percent of total financial sector assets at the end of 2006, while other types of NBFIs accounted each for less than 2 percent (Table 3).

**Table 3. Lithuania: Total Assets of Financial Market Participants, 2006**

	Litas (in millions)	In percent of total
Banks	52,577	81
UCITS	462	1
Leasing companies	7,413	11
Investment funds	602	1
Life insurance companies	1,241	2
Non life insurance companies	1,506	2
Second pillar pension funds	770	1
Third pillar pension funds	47	1
Stock brokers	143	0
<b>Total</b>	<b>64,761</b>	<b>100</b>

Source: Bank of Lithuania, ISC.

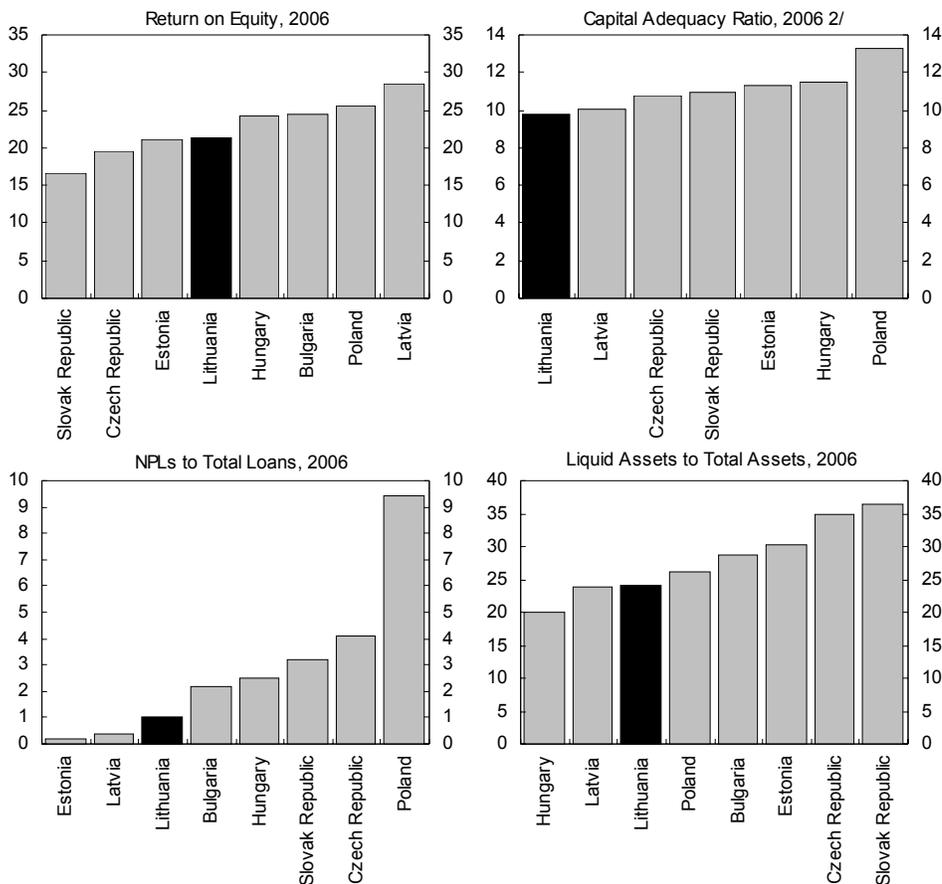
<sup>9</sup> Yearly constructions cover about half of the estimated required new 15,000 units.

<sup>10</sup> See Appendix IV.

## II. STABILITY ASSESSMENT OF THE BANKING SYSTEM

11. **The banking system's financial soundness indicators (FSIs) are generally satisfactory and compare favorably with other countries in the region.** Profitability has been on the rise since the early 2000s, return on assets (RoA) more than doubled since 2002, and nonperforming loans are low (Figure 4, and Appendix III). The system's capital adequacy has also increased somewhat in the last two years, thanks to action by the BoL, although it is still low relative to the average for the EU and the new member states. However, cross-country comparisons of FSIs are not strictly possible because of differing accounting and supervisory treatments: in this case, Lithuania restricts the inclusion of general reserves and hybrid capital instruments into Tier 1 capital, and also has restrictions on the inclusion of interim bank profits in Tier 1 and total regulatory capital. Lithuania also applies stricter risk weights than other countries to certain asset classes.

**Figure 4. Lithuania: Cross-Country Banking Soundness Indicators 1/**  
(In percent; unless otherwise indicated)



Sources: IMF, Global Financial Stability Report; European Central Bank; and IMF staff estimates.

2/ CAR for Lithuania has restrictions on the amount of retained profits in regulatory capital calculations. If adjusted, the CAR for Lithuania increases from the reported 9.8 percent before the adjustment to 11.1 percent after the adjustment.

12. **Capital buffers—defined as the difference between regulatory and economic capital—remain modest.**<sup>11</sup> The average regulatory capital for the five largest banks (as of 2007Q3) surpasses risk-based economic capital estimates (as of 2006Q4) by an average of only 1.6 percentage points. This buffer seems insufficient in the event that significant credit, market, liquidity or operational risks materialize. This assessment is supported by the results of the stress tests below.

13. **Staff and the BoL conducted top-down stress tests for credit risk on the five largest banks using risk-based methodologies developed by the mission and drawing on banking data provided by the authorities.** The central stress scenario (scenario 1) involved a boom-bust cycle in real estate prices and credit accompanied by a strong increase in interest rates (Appendix VI). This scenario incorporated a hard landing, which, although extreme, would encompass the risks described in the earlier section. The scenario was run over 12 quarters and was developed using the BoL's macroeconomic model. In addition, stress tests to evaluate the resilience of the banking sector portfolios to changes in the exchange rate were conducted. These scenarios encompassed an increase/decrease in the exchange rate of 30 percent (scenarios 2 and 3, respectively). These latter two scenarios are clearly low probability, extreme events,<sup>12</sup> and the staff note the authorities' full commitment to the exchange rate peg under the CBA. Stress tests were conducted on non-consolidated bank entity basis.

14. **The results on the stress tests need to be interpreted with caution, and given data limitations they could underestimate credit risk.** Due to the lack of macroeconomic data comprising at least one economic cycle, assumptions were made to model the behavior of these variables under an economic downturn. As time series of probabilities of default (PDs) were not available, proxies based on system-wide data were used,<sup>13</sup> and although these were considered to be adequate, preliminary individual bank data on PDs indicate that bank-specific PDs might differ significantly and that the proxies employed in the exercise might underestimate risk for some banks. Additionally, since cross country data used to estimate the elasticity of NPLs to interest rate movements did not explicitly take into account the term structure of interest rates, and given the relatively large share of variable interest rate loans in Lithuanian bank portfolios, the results are likely to have underestimated the impact of interest rate shocks on NPLs. The BoL's economic model also did not include financial accelerator or asset price effects. Therefore, the behavior of credit growth was proxied, the decrease in asset prices was exogenously assumed, and second round effects on the macroeconomy were not incorporated. On the other hand, stress tests did not take into account management action during a downturn to

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<sup>11</sup> Economic capital is defined as the amount of capital that is necessary to cover banks' unexpected losses at the 99.95 VaR.

<sup>12</sup> Stress testing incorporating low probability extreme events is a standard practice in FSAPs.

<sup>13</sup> The stock of provisions was used as a proxy for PDs.

redress the situation or adequately estimated operating income that could absorb losses in a downturn. The BoL noted that PDs provided by banks were preliminary and not validated by the BoL and therefore provided unreliable information as regards to the underestimation of credit risk.

### Credit risk

15. **The results of the stress tests show that credit risk is the main source of risk in the banking system.** Under scenario 1, banks would experience mild capital stress (Table 4). For three of the five banks, and for the system on average, the minimum CAR of 8 percent would be breached after the tenth quarter. If the level of profits as of 2007Q3 was sustained and included as part of the loss buffer, which is highly improbable in a stress scenario, the minimum CAR would not be breached for the system on average; nonetheless, the CAR of three banks would fall below 8 percent.

16. **The extent of stress would be more severe under scenario 2, while scenario 3 would have only a mild effect on banks' CARs.** Under scenario 2, the minimum CAR for three banks and for the system on average would be breached after the fifth quarter, with a substantial shortfall in the last quarter (Table 5). Moreover, some banks would be more seriously affected than others; the CAR of four banks would fall below 3 percent in the last quarter. If the same level of profits recorded as of 2007Q3 was included as part of the loss buffer, the minimum CAR for the system on average would be breached only after the sixth quarter, but three banks would fall below 8 percent, and the CAR of two banks would fall below 3 percent in the last quarter.

**Table 4. Lithuania: Scenario 1—Capital Adequacy Ratio after Shock**  
(In percent)

Date	Without profits	With profits
2007Q1	11.46	13.30
2007Q2	11.23	13.07
2007Q3	11.03	12.87
2007Q4	10.59	12.43
2008Q1	10.25	12.10
2008Q2	9.61	11.45
2008Q3	9.06	10.90
2008Q4	8.95	10.79
2009Q1	8.65	10.49
2009Q2	8.13	9.97
2009Q3	7.41	9.25
2009Q4	7.08	8.92

**Table 5. Lithuania: Scenarios 2 and 3—Capital Adequacy Ratio after Shock**  
(In percent)

Date	Scenario 2		Scenario 3	
	Without profits	With profits	Without profits	With profits
2007Q1	11.57	13.41	11.45	13.29
2007Q2	10.88	12.72	11.36	13.20
2007Q3	10.48	12.32	11.52	13.37
2007Q4	9.63	11.47	11.36	13.20
2008Q1	8.84	10.68	11.19	13.03
2008Q2	7.32	9.16	10.98	12.82
2008Q3	5.96	7.80	10.83	12.68
2008Q4	6.05	7.89	10.78	12.63
2009Q1	4.77	6.61	10.81	12.65
2009Q2	4.02	5.86	10.69	12.53
2009Q3	2.77	4.61	10.46	12.30
2009Q4	2.55	4.40	10.67	12.51

### Market risk

17. **Stress tests indicate that market risk by itself has considerably milder implications than those arising from credit risk.** In view of the prevalence of variable interest rates on both sides of the balance sheets of banks, interest rate risk in banks is modest. Also, the effect of an equity or real estate price shock on banks is small reflecting limited direct exposures to these markets. However, exchange rate risk varies significantly among banks, both in terms of the size and direction of this risk. While most banks had long open positions in euro at the end of 2005, the majority of banks were holding short positions at the end of September 2007, largely reflecting the growing litas lending in the last two years resulting from the decrease of spreads between the litas and euro rates. However, spreads have been on the rise since March 2007 and therefore banks' net euro positions were significantly changed around end-2007 with a shift from litas to euro lending; most banks are now either long or around balance in euro. Based on end-September 2007 data, in a scenario considering a change in the exchange rate of -30 percent, the CARs of two banks (comprising 8.5 percent of total sector's assets) would drop below the 8 percent minimum,<sup>14</sup> although the system as a whole would be able to withstand such a shock (Table 6). Although market risk appears to be limited, the BoL should continue to monitor closely risks arising from these exposures.

<sup>14</sup> The smaller of the two banks would be severely affected by this shock.

**Table 6. Lithuania: Impact of Exchange Rate Risk on Bank Capital, end-September 2007 1/**  
(In percent)

	Average across banks
CAR before stress	12.3
CAR after -30 percent change in euro/litas rate	10.1
CAR after +30 percent change in euro/litas rate	14.6

1/ CARs reflect the unweighted average for the banking system.

Notes: Results are based on a single factor top-down stress test of exchange rate risk using individual bank level data on open positions in euro.

### Liquidity risk

18. **Despite the dependence of subsidiaries and branches of foreign parent banks on parent bank funding, stress tests indicate that these banks would be able to withstand stressful scenarios involving a reduction in parent bank financing.** While withdrawals of liabilities to parent banks would have a significant impact on the liquidity positions of these banks, they maintain positive liquidity ratios (Table 7). A reverse liquidity stress test indicates that, on average, banks with foreign parents would be able to withstand a parent bank funding withdrawals up to 43 percent (ranging from 18–100 percent for different banks) before becoming illiquid. The demonstrated resiliency of these banks can be attributed to the prevalence of long-term parent funding and the high levels of liquidity that banks maintain.

19. **Liquidity stress events arising from large withdrawals of both resident and nonresident deposits appear to have a more significant impact on banks' liquidity positions, although all systemic banks remain liquid.** The results show sensitivity to withdrawals of residents' deposits, although withdrawals of nonresident deposits also have a significant impact on a few banks where these deposits are concentrated. The impact of withdrawals of foreign banks deposits and domestic interbank deposits is less severe, primarily because the domestic interbank market is small in size. Only under the most severe stress combinations (scenarios 3.B and 3.C), would some systemically important banks face liquidity problems. Therefore, while stress tests indicate that banks' liquidity positions are adequate under individual severe scenarios, liquidity positions might not be sufficient under more severe events that combine parent bank withdrawals with deposit withdrawals. Although the probability of such a combination of events is low, given that the BoL's LoLR operations are limited by the CBA, the BoL should discuss further with banks, parent banks, and the home authorities contingency plans in the case of such severe events. It would also be useful to weigh the fiscal costs of increased reserve cover against the potential benefits.

**Table 7. Lithuania: Liquidity Stress Test Results for the Banking System, end-September 2007 1/**

Scenario	Description	System-Wide Liquidity Ratio		Illiquid Banks after Shock	
		Actual	Shock	No. of banks	% of sector's assets
Scenario 1.A	Withdrawal of 10% of liabilities to parent coming due within 3 months	39.7	38.6	0	0
Scenario 1.B	Withdrawal of 10% of all liabilities to parent 2/	39.7	32.3	0	0
Scenario 1.C	Withdrawal of 50% of liabilities to parent coming due within 3 months	39.7	34.0	1	1.3
Scenario 2.A	Overnight withdrawal of 20% of residents deposits	39.7	22.0	0	0
Scenario 2.B	Overnight withdrawal of 80% of non-residents deposits	39.7	31.2	0	0
Scenario 2.C	Overnight withdrawal of 80% of foreign banks deposits	39.7	37.1	0	0
Scenario 2.D	Overnight withdrawal of 100% of domestic interbank deposits	39.7	38.6	0	0
Scenario 2	Overnight withdrawal of 20% of resident deposits, 80% of non-resident deposits (incl. foreign bank deposits), and 100% of domestic interbank deposits	39.7	8.5	4	9.4
Scenario 3.A	Combination of scenarios 1.A and 2	39.7	6.8	4	9.4
Scenario 3.B	Combination of scenarios 1.B and 2	39.7	0.0	8	69.2
Scenario 3.C	Combination of scenarios 1.C and 2	39.7	0.0	6	49.0

1/ Liquidity stress tests include all eleven banks operating in Lithuania, including foreign bank branches.

2/ A reverse liquidity stress test indicates that, on average, banks with foreign parents would be able to withstand a parent bank funding withdrawals up to 43 percent (ranging from 18-100 percent for different banks) before becoming illiquid.

### Overall stability assessment

20. **Stress test results indicate that the banking system is reasonably resilient to macroeconomic shocks, but existing capital buffers might not be sufficient in low probability extreme events and strengthening the buffers further would be advisable.** This becomes particularly important in view of the riskier external environment. Further, the actual impact on banks is expected to be higher than that indicated by stress tests since, given data limitations, stress tests might have underestimated credit risk. The impact on banks' capital would also be more severe if a combination of significant credit, market, and liquidity shocks materialized. The BoL indicated that they would continue to urge banks to strengthen their capital bases.

21. **Liquidity stress tests suggest that liquidity would be broadly adequate under individual stress scenarios but might not be sufficient under a combination of severe events, and contingency liquidity planning is advisable.** Given the limitations imposed by the

currency board, the BoL should discuss with banks, parent banks, and the home authorities contingency liquidity plans, including the availability of credit lines.

### III. MITIGATION OF RISKS: REGULATORY AND SUPERVISORY ISSUES

#### A. Banking Sector

22. **Lithuania's regulatory and supervisory framework are in line with international standards.** The BoL conducts effective on-site and off-site supervision on all banks operating in Lithuania and the legal framework affecting banking supervision have been modified to conform to EU Directives. Basel II regulations have become effective as of January 1, 2008. Yet, the dominance of foreign banks presents challenges with respect to cross-border issues and linkages, and requires continued close cooperation with the home supervisors.

23. **In view of the rapid growth of bank lending, the BoL has taken several actions over the past few years to encourage prudent credit risk management and to strengthen banks' capital base** (Appendix V). Measures taken include a narrowing of the definition of residential mortgage loans which effectively raises the risk weight, and the imposition of a 60-percent limit on the part of current year's profit that may count towards regulatory capital, to ensure a prudent evaluation of regulatory capital. Furthermore, the BoL has requested banks to fully retain profits made in 2005 and 2006, and intends to do so again with respect to the profits made in 2007. Although some banks indicated that it is already their policy to retain profits in order to finance further expansion, the mission welcomes the BoL's actions and its efforts to urge banks to follow prudent lending policies. Lending standards have been tightened further by most banks in 2007, in response to the BoL's policy and developments in the region and the international capital markets.

24. **Nevertheless, the stress tests above indicate that banks' regulatory capital need to be strengthened further.** The mission welcomes the fact that, where the Capital Requirements Directive (i.e., the EU transposition of Basel II) allows for national discretions, the BoL has chosen the more conservative option.<sup>15</sup> However, given the limited historical banking and macroeconomic time series available for Lithuania, risks in banks' loan portfolios may be underestimated. This issue is particularly salient in the case of those banks using the advanced approaches under Basel II. Further, while current LTV ratios appear to be on the prudent side, they reflect the steep rises in real estate prices in recent years, which might reverse abruptly in the case of a significant slowdown. In the upcoming process of validating banks' IRB models,<sup>16</sup>

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<sup>15</sup> For example, for commercial real estate loans the BoL has chosen to apply a 100 percent risk weight whereas a 50-percent risk weight would have been possible, and the maximum amount of a retail exposure has been set at 1 million litas (about 290,000 euros) instead of 1 million euros, limiting the amount of assets that receive a 75-percent risk weight.

<sup>16</sup> It is expected that most Lithuanian banks will not be allowed to use IRB and AMA approaches before 2009; only one bank was approved for applying these approaches so far.

the BoL should ensure that banks capture their loan portfolio risks in their models adequately; otherwise, these risks should be captured under Pillar 2 and capital surcharges based on each bank's individual risk should be considered. The amount of these surcharges should be guided by sensitivity and stress test analyses. In the context of preparations for the FSAP update, the BoL, together with staff, has developed a stress testing model that could be used for Pillar 2 review, once estimations of PDs on a bank-by-bank basis are completed.

**25. There are some additional measures that the BoL can take to enhance its surveillance capacity and to reduce risks related to real estate lending.** The BoL already pays significant attention to ensuring appropriate collateral valuation, including in its on-site inspections, but additional measures that the BoL could take include:

- enhancing the BoL's capacity to assess the real estate market situation and its implications for bank lending through: (a) the use of more diversified monitoring tools including early warning signals;<sup>17</sup> (b) the identification of the riskiest loans (e.g., developer loans and equity withdrawals) as separate reporting categories; and (c) closer coordination with the state mortgage insurer as defaults on the latter's loans would provide an early-warning signal;
- promoting the development of fixed rate loans through the BoL surveillance activity—for example by ensuring that the credit risk resulting from variable rates is taken into account in lending parameters and pricing and in the banks' IRB models; and
- enhancing consumer protection and education, especially on risks linked to variable interest, through counseling options and the prevention of over indebtedness. In addition, the disclosure of information to borrowers should be improved, including through the provision of a standardized all-in rate and of stress scenarios in case of variable rates.

**26. All relevant MoUs on cross border supervisory cooperation are in place, and contacts with home supervisors are effective.** The BoL has signed bilateral MoUs that address ongoing supervisory cooperation with all countries which have banking establishments in Lithuania and countries where Lithuanian banks are established, and all neighboring countries. The process of information exchange has become very active in the context of IRB (Basel II) validation. Currently the BoL and the Swedish Financial Supervisory Authority are drafting a separate MoU on supervision of financial conglomerates as well as on the procedures of carrying out Supervisory Review and Evaluation Process (SREP).

**27. While the BoL correctly requires that open positions in euros have to be included in the calculation of the capital requirement for foreign exchange risk, there seems to be some confusion among banks on this issue.** This confusion may be attributed to the fact that the regulatory limit on open euro positions has recently been abolished (in 2006) and banks might

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<sup>17</sup> For instance, the speed of new units sale or the stock of housing on the market remaining unsold.

have understood that this extends to capital adequacy calculations, while the BoL does include capital charges on euro positions in banks' regulatory capital calculation. The BoL has now clarified this issue to banks.

28. **The BoL has made significant progress in recent years in developing capacity to assess financial stability and to perform banking sector stress testing.** The Financial Stability Division has produced an annual financial stability report since 2005. Additionally, in 2007, the Division received technical assistance from the Fund for the development of credit risk measurement and macroeconomic stress testing methodologies, which are expected to provide important inputs into its financial stability assessments. In this relation, the scope of interaction between the BoL's Financial Stability Division and the Credit Institutions Supervision Department could be further strengthened to fully exploit the benefits of having the supervisory function within the central bank.

### **B. Securities Markets and Intermediaries**

29. **The regulatory framework for NBFIs has improved substantially over the last years and is now in conformity with EU Directives, except for a limited number of missing regulations.** The LSC is currently completing these regulations.

30. **This progress is counterbalanced by the fact that the capacity of LSC to effectively supervise securities markets is threatened by high staff turnover resulting in a lack of staff with relevant market experience.** This situation needs to be redressed as a matter of utmost urgency. Specifically, the status of LSC should be changed to enable it to pay market-based salaries, and provide it with an adequate and stable source of funding, including fees from market participants. LSC needs to implement a comprehensive staff recruitment, training and incentive plan. Failure of LSC to effectively perform its supervisory function risks breaching enforcement of several EU Directives,<sup>18</sup> creating a risk of regulatory arbitrage. Following adoption of market-based salaries, LSC could consider imposing a cooling-off period to those who leave, preventing them to join for a certain period of time companies they have supervised while at LSC.

31. **Existing deficiencies in market surveillance should be addressed.** LSC should complete the ongoing implementation of the Transaction Reporting System (TRS) in collaboration with market intermediaries and extend its coverage to the First North alternative market.<sup>19</sup> It should request daily report from the suspicious transactions detection system (SMART) by Vilnius Stock Exchange. It should also ensure the Association of Intermediaries of Public Trading in Securities (AIPTS) performs its responsibility as Self-Regulated Organization

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<sup>18</sup> In particular the Market Abuse Directive (2003/6/EC), the Prospectus Directive (2003/71/EC), the Takeover Directive (2004/25/EC), the Transparency Directive (2004/109/EC), and the MiFID (2004/39/EC).

<sup>19</sup> Alternative market platform of the OMX group in operation in the Nordic and Baltic countries.

(SRO) in enforcing the Code of Ethics for market intermediaries and otherwise sanction it as well as offenders. Adoption of IFRS should be mandatory rather than voluntary for asset management companies and financial brokerages and LSC should recruit experienced accountants to build its capacity to supervise the implementation of IFRS.

32. **Deficiencies in the regulatory and enforcement framework for insider dealing need to be addressed.** Companies should be required to disclose their ultimate controllers as part of their listing application, and to disclose any change in ultimate controllership following listing. “Black lists” indicating the companies with which staff of financial brokerages maintains a business relationship should be communicated to LSC. The Criminal Code should also be revised to exclude information shared by an insider with related parties from the concept of publicly known information.

33. **As regards cross-border collaboration, bilateral MoUs should be sought with Russia and Ukraine, as these countries are not covered by the multilateral International Organization of Securities Organization (IOSCO) MoU.**

### C. Pension Sector

34. **In 2003, the government implemented a successful pension reform establishing a second pillar allowing individuals to voluntarily allocate part of their mandatory contributions to fully funded pension funds.** The second pillar operates as a defined contribution system with individual accounts and has received large support from intermediaries and the population: currently, 55 percent of the labor force participates in the second pillar and pension fund managers offer 32 different pension portfolios (Appendix IV).

35. **However, the supervisory system suffers from fragmentation and lack of adequate skills.** Pension funds are managed by investment asset managers and insurance companies, which are supervised by LSC and ISC respectively. Supervision is largely compliance-based, which is inadequate for a system with flexible organizational structures and limited control over asset management. Although the two supervisory agencies that cover the pension system coordinate their work, there are gaps and inefficiencies. In addition to corporate governance issues noted below, data to the market are not provided on a standardized basis by LSC and ISC,<sup>20</sup> and the low capacity of LSC to retain staff has reduced its effectiveness in supervising an increasingly sophisticated pension industry.

36. **Asset managers operate under weak corporate governance standards.** Pension funds are currently formally managed by independent asset managers, but management companies

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<sup>20</sup> LSC and ISC manage different databases and report data on pension fund performance separately. This makes it difficult to compare the returns of a pension fund managed by an insurance company with those of a pension fund managed by an investment fund (bank subsidiary). This in turn damages competition as it increases the costs of comparing pension funds.

have strong operational links with their mother bank. Key concerns are that pension funds managed by banks use the depository and the broker of their mother company, and invest in funds offered by the mother company. In the case of pension funds managed by insurance companies, concerns include them the sharing of management teams for pension and other activities of the insurance company. An assessment of corporate governance and risk management of pension funds should be conducted, and supervisory agencies should clarify, through regulation, minimum standards. The main challenge is to improve the governance of pension funds without sharply increasing administrative costs.

37. **Improvements should also be adopted in other areas.** First, the regulatory framework for pension funds leaves too much room for interpretation in areas that require precision such as corporate governance and sanctions imposed by the supervisor and should be clarified. Second, although the law provides external auditors with major responsibilities in the surveillance of pension funds, in practice their assessments are limited to an opinion about the completeness and accuracy of financial statements. The supervisory commissions should clarify these requirements and a regulation should require external auditors to conduct periodic assessments of the internal control systems of pension fund managers. Third, the contestability of the market is relatively low. There is a large gap between the sophistication of products that the market offers and the capacity of the population to understand these products. In addition, contributors face administrative obstacles to switching pension fund managers.<sup>21</sup> These obstacles should be addressed and the information provided to clients streamlined. Additional effort should be made to properly disclose the fees that pension funds pay to UCITS-type funds.

#### **D. Cross-Sectoral Issues and other Nonbank Activities**

##### **Cross-sectoral supervisory framework**

38. **A review of the overall supervisory structure is required to take into account cross-sectoral linkages.** This particularly relates to inadequacies in pension sector supervision noted above. While a buoyant pension fund industry has allowed these weaknesses to go unnoticed so far, they create strong reputational risks for the institutions involved, and therefore for the financial sector and the pension reform.

39. **Resolving these issues requires an urgent review of supervisory arrangements for Lithuanian financial markets.** A parliamentary working group has been established in December 2006 to explore various approaches including integrated supervision models and is expected to submit a draft new supervision concept to Parliament in 2008. The model proposed should be designed with the objective of: (i) strengthening capacity to supervise the relations of banks and of insurance companies with their related entities; (ii) improving systemic risk

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<sup>21</sup> Note that a Draft Law on the Amendments of Law on Pension Accumulation contemplates a simplified procedure to switch pension manager.

management by ensuring adequate monitoring of issues affecting the entire financial sector; (iii) facilitating harmonization of supervisory approaches and regulation, relying on common rules for similar activities regardless of the institutions who carry them; (iv) developing a unified risk-based approach (i.e., harmonizing regulations on risks affecting various financial institutions—e.g., market risk, liquidity risk, etc); (v) increasing the flow of information between regulators and supervisors of various institutions; and (vi) providing the supervisory institution(s) with sufficient resources and with the ability to offer market-based incentives and salaries to staff.

### **Leasing sector**

40. **The leasing sector does not present financial stability threats or regulatory arbitrage opportunities vis-à-vis the banking sector at this stage.** Assets of leasing companies have grown rapidly at an annual rate of 48 percent over the last six years, but are still relatively small at around 10 percent of GDP. Although leasing companies are not supervised on an entity basis, they are subject to the consolidated supervision of the BoL since all leasing companies are subsidiaries of domestic banks.<sup>22</sup> Overall, leasing exposures are viewed as less risky compared to banking loans as they are secured with the financed assets. There are no obvious impediments to repossession of leased assets, and the default rate is generally low at 0.5 percent of total loans.

### **Insurance Supervisory Commission<sup>23</sup>**

41. **The status of the ISC should be amended to make it independent from the executive branch of the government.** The Chairman of ISC is appointed by the Prime Minister upon nomination by the Minister of Finance, and members of ISC are appointed by the Prime Minister upon nomination by the Chairman. Although there has been no reported interference by the government in ISC's decisions and day-to-day management to date, the existing structure leaves the ISC vulnerable to at least the appearance of political interference. A preferred alternative would be for the ISC Chairman to be appointed by Parliament upon nomination by the Prime Minister.

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<sup>22</sup> From a risk management perspective, leasing companies generally function as the sales arm for the parent company, while all other operations are integrated in group risk management, including risk management strategy, credit standards, accounting, internal control, and internal auditing.

<sup>23</sup> The mission did not evaluate the regulatory and supervisory framework for insurance. Accordingly, weaknesses imposed by the existing salary structure at LSC might equally apply to ISC, but this requires further assessment.

## IV. CRISIS MANAGEMENT, SAFETY NETS, AND CROSS-BORDER COOPERATION

### A. Safety Nets: LoLR and Deposit Insurance Framework

#### Lender-of-last-resort operations

42. **While the legal framework for LoLR operations by the BoL is adequate, the CBA limits the scope of these operations.** The BoL Law enables the BoL to conduct open market operations, operate a discount window, and conduct LoLR operations.<sup>24</sup> At the same time, these operations are limited by the required foreign exchange coverage of the BoL liabilities under the CBA. The reserve cover stood at around 140 percent at end-2007, well above the 100 percent minimum, so that the excess reserves available for LoLR purposes amounted to 14.4 percent of total banking sector deposits. Especially in light of global financial turbulence, Staff suggest that consideration could be given to increasing this coverage ratio, while weighing carefully the fiscal costs that this would imply.

43. **Procedures for a rapid LoLR operations should be updated to ensure an expedited access in emergency conditions.** In line with the 2002 FSAP recommendations, the April 2006 amendment to the BoL Law provides the BoL with the flexibility to accept various types of collateral for BoL lending. The BoL is in the process of updating existing procedures for LoLR, in part to reflect its new organizational structure. In this context, the BoL should also consider incorporating guidelines for collateral valuation and approval.

#### Deposit insurance

44. **Deposit insurance coverage was raised in line with the EU Directive on Deposit Guarantee Schemes on January 1, 2008.** The coverage ratio (the ratio of the coverage limit to GDP per capita) is now 2.6, which is higher than the European average of 2 but lower than the global average of 2.9 (Appendix IV). Also, as of end-September 2007, around 99.5 percent of depositors had coverage of at least 90 percent of their deposits. Insurance premiums are not risk-based and a consideration of a risk-based approach might be warranted as the cost of deposit insurance currently falls disproportionately on the large foreign banks, which are deemed to be of lower risk than some of the smaller banks.<sup>25</sup> The introduction of a risk-based approach may also prove useful in curtailing the aggressive behavior of some of the smaller banks in collecting deposits by offering higher interest rates, and should be implemented in a way that accelerates the accumulation of capital in the DIF.

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<sup>24</sup> Although it did in the past, the BoL does not currently operate a discount window or conduct open market operations. LoLR operations can only be performed in litas, although banks can convert these into euros through the BoL's foreign exchange standing facility. The last time the BoL conducted LoLR operations was in December 2002.

<sup>25</sup> See Appendix IV, Table 15 for a list of countries in Europe that have introduced premiums that are risk-based.

45. **The DIF has yet to reach its target fund size of 3-4 percent of insured deposits.**<sup>26</sup> At around 2.3 percent of insured deposits, the fund at this stage would have sufficient resources to cover a small bank failure. By moving to a 4 percent coverage ratio, the DIF would be much better placed to cope with stress even among the larger banks, although it would still need to borrow to meet fully its obligations.<sup>27</sup>

### B. Crisis Management and Cross-Border Cooperation

46. **The authorities have been enhancing cross-border cooperation and strengthening the financial crisis management framework.** Multilateral cross-border agreements—including the EU-wide trilateral MoU of 2005 on crisis management cooperation—and an MoU between the central banks of the Baltic countries and Sweden on the management of a financial crisis in banks with cross-border subsidiaries or branches have also been concluded. A domestic crisis management plan is currently being discussed by the relevant authorities.

47. **Crisis management arrangements are also strengthened, but are still untested.** The BoL has participated in two multilateral crisis management simulation exercises so far. The first was EU-wide and the second (in which the Baltics participated as observers) was held in 2007 and was based on the MoU among the five Nordic countries on management of a crisis involving banks with cross border establishments.<sup>28</sup> These exercises identified areas that need to be strengthened, which is welcome.

48. **Given the riskier external environment, contingency planning for emergency liquidity support should take priority in cross-border exercises and discussions.** It is envisaged that further simulation exercises will be conducted in the coming months, and the authorities intend to continue to actively participate in the multilateral cross-border simulation exercises.

### C. Banking Sector Resolution Framework

49. **The BoL now has adequate powers to perform supervision and apply enforcement measures, but these may need some refinements.** Since Lithuania's accession to the EU, its legislation has been harmonized with the EU legislation. Some of these changes were also based on previous experience of the 1995 banking crisis and provide the BoL with significant discretion in applying its powers. While the reasons and the need for BoL to apply discretionary

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<sup>26</sup> Assuming no payout in the mean time, it is expected that it will take at least another three years before the fund will reach its target size.

<sup>27</sup> Arrangements to ensure speedy pay off to depositors appear to be in place. These arrangements have been tested in two bank failures in the late 1990s.

<sup>28</sup> Denmark, Finland, Iceland, Norway and Sweden. The Nordic countries participation was trilateral (central banks, banking supervisors, and MoFs), while only the central banks of the Baltic countries participated.

powers are acknowledged, the framework could be streamlined and strengthened in some areas. For example, the law should incorporate explicit triggers for bank intervention, at a minimum at insolvency (which should clearly be defined in the law as a bank having a zero net worth). Furthermore, to avoid potential conflicts in legislation, it would be useful in the medium term to consolidate bank insolvency legislation under one comprehensive law.<sup>29</sup>

#### **D. Creditors' Rights and Corporate Insolvency Framework**

50. **Lithuania has made significant progress in the field of creditor rights legislation and related institutions.** Under the current legal framework, the creation and registration of secured transactions is rather easy and affordable and enforcement is efficient. In the area of corporate insolvency, the Enterprise Bankruptcy Law and the Law on Restructuring of Enterprises are generally consistent with international standards.

51. **Notwithstanding the aforementioned progress, a number of aspects of creditor rights and insolvency systems can be improved.** Making the simplified restructuring procedure more flexible would enhance the reorganization regime. Under formal reorganization proceedings, restructuring plans can be adopted with the favorable voting of a majority of creditors, whereas plans require unanimity under the simplified procedure—a rigidity that makes the use of the latter difficult and rare. This would require an amendment to the Law on Restructuring (2001). Also, while the institutional framework for commercial disputes and insolvency proceedings is generally sound, specialization of some judges would improve the system's efficiency.

52. **Other legal reforms could further improve the legal infrastructure for secured lending.** These include: (i) amending the Civil Code to allow the creation of security interests related to any or all of a debtor's obligations to a creditor, present or future, and in all types of assets and on a global basis; (ii) eliminating the concurrent functions of notaries and judges—mortgage judges should be exclusively dedicated to jurisdictional activities (i.e., enforcement of secured claims) rather than to administrative tasks; and (iii) reviewing the current fee structure for executions, as the remuneration of the bailiffs (4 to 20 percent of the amount recovered) is generally considered too high by users of their services.

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<sup>29</sup> Currently three main laws apply to enforcement measures, restructuring or liquidation of banks. These are the law on banks, law on the Bank of Lithuania and law on financial institutions. Other main acts such as the Civil Code apply as well.

## APPENDIX I. MAIN RECOMMENDATIONS

	Timeframe
<b>Mitigation of Risks: Regulatory and Supervisory Issues</b>	
<b>Banking sector</b>	
<ul style="list-style-type: none"> <li>• In the process of IRB model validation under Basel II, ensure that banks' internal model capture the risk characteristics of the Lithuanian loan portfolios adequately. Otherwise, assess capital surcharges under Pillar 2 of Basel II, as needed, based on banks' individual risks not captured under Pillar 1</li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Discuss further with banks, parent banks, and the home authorities contingency liquidity plans in case of a severe liquidity stress event</li> </ul>	Immediate
<ul style="list-style-type: none"> <li>• Strengthen the analytical cooperation between the BoL's Banking Supervision and Financial Stability Departments to enhance financial stability analysis</li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Clarify to banks that open euro positions are included in the capital adequacy calculations for market risks</li> </ul>	Immediate
<b>Securities markets regulation and supervision</b>	
<ul style="list-style-type: none"> <li>• Complete missing regulations under EU Directives <ul style="list-style-type: none"> <li>✓ risk-based supervision rules</li> <li>✓ valuation of fair value of infrequently traded securities and derivatives rules</li> </ul> </li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Broaden the coverage of IFRS to financial brokerages and asset management companies</li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Modify status of LSC to enable it to pay market-based salaries to its staff and to have access to an adequate and sustainable source of funding, including fees from market participants</li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Prepare and implement a comprehensive staff recruitment, development and incentive plan for LSC</li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Strengthen market surveillance by: <ul style="list-style-type: none"> <li>✓ Completing the ongoing implementation of TRS in collaboration with market intermediaries</li> <li>✓ Extending TRS coverage to alternative market (<i>First North</i>)</li> <li>✓ Carrying out enhanced market surveillance through TRS and through SMART reports to be provided daily by Vilnius Stock Exchange</li> <li>✓ Imposing fines on AITPS in cases it does not enforce the Code of Ethics for market intermediaries, in addition to fines imposed on offenders</li> </ul> </li> </ul>	Short term
<ul style="list-style-type: none"> <li>• Reform the regulatory and enforcement framework for insider trading by: <ul style="list-style-type: none"> <li>✓ Requiring companies to disclose their ultimate controllers as part of their listing application, and to disclose any change in ultimate controllership following their listing</li> <li>✓ Requiring brokers to communicate black lists to LSC</li> </ul> </li> </ul>	Immediate

✓	Revising the Criminal code to exclude information shared by insiders with third parties from the concept of publicly known information	
•	Sign MoU with the Russian and Ukrainian supervisory authorities	Medium term
<b>Pension sector</b>		
•	Provide more precision in regulations by specifying in more details the rights and responsibilities of pension fund managers and supervisors in the pension law	Short term
•	Prepare a new complete regulation on the corporate governance and internal control systems for pension fund managers and enforce it	Immediate
•	Specify in the regulation the responsibility of external auditors in auditing internal control systems of pension funds	Short term
•	Consolidate LSC and LIC databases and enhance disclosure of information to public	Short term
<b>Cross-sectoral issues and other non-bank activities</b>		
•	Improve supervisory structure to adequately address cross-sectoral linkages, particularly those arising as a result of pension fund supervision by multiple supervisors	Immediate
•	Change status of ISC to ensure independence from Executive	Short term
<b>Crisis Management, Safety Nets, and Cross-Border Cooperation</b>		
<b>Safety nets: LoLR and deposit insurance</b>		
•	Update procedures for emergency liquidity support in crisis conditions and consider including guidelines for collateral valuation and approval to ensure an expedited process in emergency conditions	Immediate
•	Consider a risk-based approach to deposit insurance premiums	Medium term
<b>Cross-border cooperation and crisis-management</b>		
•	Continue to enhance cross-border cooperation and to participate in cross -border crisis management simulation exercises	Ongoing
•	Finalize the domestic crisis management arrangements which the authorities are currently working on	Short term
<b>Banking sector resolution framework</b>		
•	Define the condition for the recognition of a bank as insolvent more precisely in the regulations (at a minimum as zero net worth), and preferably include this into the law	Medium term
<b>ICR framework</b>		
•	Amend mortgage legislation to: (1) allow creation of security interests related to future obligations, (2) eliminate the role of judges at registration of mortgage and pledges, and (3) review bailiffs fee structure	Medium term
•	Amend Law on Restructuring to allow simplified restructuring procedures for out-of-court plans approved by a majority of creditors	
•	Specialize a number of judges to deal with insolvency cases	

## APPENDIX II. IMPLEMENTATION OF THE 2002 FSAP RECOMMENDATIONS

53. **The 2002 FSAP found the banking system to be well capitalized, liquid, and profitable, and identified no major sources of vulnerability.** The Financial System Stability Assessment (FSSA) noted the sound macroeconomic policies in the context of the currency board arrangement, vigorous structural and legal reforms in preparation for accession to the EU, and strong banking regulation and supervision. Against this background, recommendations focused mainly on the legal and regulatory framework for the financial system, based inter alia on the assessment of Lithuania's observance of international standards and codes. Areas noted to warrant attention included bank intervention and failure resolution, and the regulation and supervision of NBFIs and markets. The implementation of FSAP recommendations has generally been satisfactory (Table 8).

**Table 8. Lithuania: Status of Implementation of the 2002 FSAP Recommendations**

2002 FSAP Recommendation	Assessment of Implementation
<b>Banking Supervision</b>	
Require greater accountability of bank directors for risk management within their banks.	Since 2006, banks are required to publicly disclose information on their risks and risk management practices.
Revise loan classification and provisioning rules to better reflect the economic value of a bank's loan portfolio.	The 2005 Minimum Loan Assessment Requirements follow IFRS and assign responsibility for proper provisioning to a bank's board.
CP 1(5) Make provision for the legal protection of members of the Board of the BoL and banking supervision staff, while retaining robust accountability arrangements.	The Law on the BoL was amended to include a new Article 46(1) which explicitly provides for legal protection of BoL Board members and supervisory staff.
The collateral accepted for LoLR operations should be defined more broadly so as not to constrain the ability of the BoL to adequately conduct these operations.	The new BoL Law provides for a wider range of collateral.
The legal powers of the BoL to intervene in, and quickly resolve the failure of banks experiencing financial distress or insolvency should be strengthened.	The framework has been substantially strengthened and gives the BoL ample powers to intervene an ailing bank. At a minimum one stringent definition of an insolvent bank is recommended to be included in the regulatory framework.
Cooperation with home country supervisors of Lithuania banks should be strengthened.	The policy of the BoL is to conclude MoUs between all financial supervisory authorities from jurisdictions with cross-border banking activities with Lithuania as well as all neighboring countries. This has been done. The BoL has participated in cross-border multilateral crisis management simulation exercises based on multilateral MoUs with Sweden and the other Baltic's and EU and will continue to do so.
<b>Insolvency and Creditors' Rights</b>	
Strengthen the insolvency system: <ul style="list-style-type: none"> <li>• Most insolvency proceedings were</li> </ul>	The following reforms were introduced: <ul style="list-style-type: none"> <li>• A new Code of Civil Procedure which, among other</li> </ul>

<b>2002 FSAP Recommendation</b>	<b>Assessment of Implementation</b>
<p>liquidation cases, averaging more than 3 years and yielding little benefit to creditors.</p> <ul style="list-style-type: none"> <li>• There was no sufficient experience with the then newly enacted Enterprise Restructuring Law so as to properly assess its effectiveness.</li> <li>• The insolvency system in general was rather weak and considerably fragmented because three different insolvency laws—entered into force in 1993, 1997 and 2001—governed insolvency proceedings (according to the initiation date of cases).</li> </ul>	<p>reforms, introduced a “simplified court order procedure”;</p> <ul style="list-style-type: none"> <li>• Application of the Civil Code rules to mortgages and pledges, which in the past were governed by a Mortgage Law and Pledge Law;</li> <li>• More experience is gained as restructuring proceedings are taking place under the new enterprises restructuring system.</li> </ul>
<p>Strengthen the institutional framework for creditor rights and insolvency:</p> <ul style="list-style-type: none"> <li>• Court efficiency was found to be stifled by a lack of specialization among judges.</li> <li>• Low standards for licensing, as well as over-licensing, inadequate training and inconsistent performance of insolvency administrators, affected the implementation of the insolvency system.</li> </ul>	<p>The following reforms were introduced:</p> <ul style="list-style-type: none"> <li>• Reforms to the Law on Courts;</li> <li>• New rules regulating the insolvency administration profession.</li> </ul>
<b>Capital markets</b>	
<p>The 2002 reported that Lithuania’s conformity to IOSCO principles was high.</p>	<p>Since then, the government has completed a number of legal reforms to reflect key EU directives concerning the capital markets.<sup>30</sup> Particularly, it passed a new Law on Markets in Financial Instruments and a revised Securities Law in January 2007.</p>

<sup>30</sup> The Prospectus Directive, Transparency Directive, Directive on MiFID, Directive on UCITS, the Collateral Directive and the Clearing and Settlement Code of Conduct.

## APPENDIX III. FINANCIAL VULNERABILITY INDICATORS

**Table 9. Lithuania: Financial Soundness Indicators for the Banking Sector, 2002–07**  
(In percent, unless indicated otherwise)

	2002	2003	2004	2005	2006	2007
<b>Capital adequacy</b>						
Regulatory capital to risk-weighted assets <sup>1</sup>	14.7	13.2	12.4	10.3	10.7	10.9
Regulatory tier I capital to risk-weighted assets <sup>1</sup>	12.1	11.1	10.2	8.9	7.8	7.7
Capital to assets <sup>2</sup>	10.5	9.8	8.7	7.2	7.1	7.4
<b>Asset quality</b>						
Nonperforming loans net of provisions to capital <sup>2,3,7</sup>	21.1	11.7	12.6	5.7	9.7	10.4
Nonperforming loans to total (non-interbank) loans <sup>7</sup>	5.3	2.4	2.2	0.6	1.0	1.0
<b>Sectoral distribution of loans to total loans <sup>8</sup></b>						
Agriculture, hunting, forestry	2.0	1.8	2.0	2.0	1.9	1.7
Fishing	0.2	0.1	0.1	0.1	0.1	0.0
Mining and quarrying	0.4	0.3	0.2	0.2	0.1	0.1
Manufacturing	21.4	21.8	17.5	15.2	11.9	9.9
Electricity, gas and water supply	7.3	7.6	6.4	4.2	2.5	2.2
Construction	4.0	3.2	2.9	3.9	5.7	4.1
Wholesale and retail trade; repair of motor vehicles, motorcycles; personal and household goods appliances	20.2	19.2	15.7	13.0	12.8	10.7
Hotels and restaurants	1.6	1.7	1.6	1.5	1.6	1.4
Transport, storage and communication	5.0	2.9	2.3	2.6	2.5	2.2
Financial intermediation	10.6	10.7	10.8	14.6	7.3	5.5
Real estate, renting and other business activities	6.8	7.6	9.8	12.5	14.5	16.8
Public administration and defence; compulsory social security	4.3	2.4	4.1	3.3	1.5	1.3
Education	0.2	0.1	0.1	0.1	0.0	0.0
Health and social work	0.4	0.6	0.8	0.5	0.3	0.3
Other utilities, social and personal services	1.4	1.1	0.9	0.7	0.9	0.9
Other types of economic activities	0.0	0.0	0.0	0.0	0.0	0.0
Loans not attributed to economic activities	14.4	18.9	24.9	25.8	36.4	42.9
Residential real estate loans to total (non-interbank) loans	11.2	14.3	18.4	21.2	24.7	27.8
All large exposures to regulatory capital <sup>1,5</sup>	194.7	213.1	199.6	239.0	189.6	152.5
<b>Earnings and profitability</b>						
Return on equity (Net income to average capital) <sup>2,4</sup>	9.1	11.4	13.5	13.8	21.4	27.2
Return on assets (Net income to average total assets) <sup>4</sup>	0.9	1.2	1.3	1.1	1.5	2.0
Interest margin to gross income	51.3	49.1	51.0	53.8	54.6	57.8
Noninterest expenses to gross income	82.7	81.6	70.9	66.6	58.7	52.6
Trading and foreign exchange gains (losses) to gross income	14.1	10.3	8.1	7.8	8.5	7.6
Personnel expenses to noninterest expenses	42.0	38.3	37.3	37.4	37.6	39.3
Spread between reference lending and reference deposit rate	5.2	4.2	3.6	3.3	3.5	4.1
<b>Liquidity</b>						
Liquid assets to total assets	29.3	27.7	28.3	26.9	24.1	21.9
Liquid assets to current liabilities	42.0	42.4	41.7	42.9	41.9	43.5
Spread between highest and lowest interbank rate	9.0	3.9	1.7	3.3	2.8	6.1
Customer deposits to total non-interbank loans	132.1	101.7	95.7	83.3	72.5	61.3
<b>Foreign exchange risk</b>						
Foreign-currency-denominated loans to total (non-interbank) loans <sup>6</sup>	51.5	54.6	58.3	65.8	52.8	55.6
Foreign-currency-denominated liabilities to total liabilities <sup>6</sup>	44.5	46.1	45.6	51.6	52.0	56.4
Net open position in foreign exchange to regulatory capital <sup>1</sup>	-1.5	10.8	-1.9	-1.0	-1.4	-2.4
<b>Equity risk and exposure to derivatives</b>						
On balance (assets) position in equities to capital <sup>2</sup>	11.7	12.2	12.2	14.9	13.2	8.6
Gross assets position in financial derivatives to capital <sup>2</sup>	0.3	0.5	0.8	1.2	4.5	9.7
Gross liabilities position in financial derivatives to capital <sup>2</sup>	2.0	2.1	0.8	0.7	4.9	7.6

Source: Bank of Lithuania.

Note: FSI are on bank entity bases only and cover all banks operating in Lithuania, including foreign bank branches.

1/ Without foreign bank branches.

2/ Capital is defined as banks shareholders' equity and foreign bank branches funds received from the head office.

3/ From end-2005 FSI is Nonperforming loans to capital.

4/ Net income before extraordinary items and taxes.

5/ Large exposure - means loans granted to the borrower the net value of which equals to, or exceeds, 10 per cent of bank capital.

6/ From 2005 The major part of foreign currency loans and foreign currency liabilities are in Euros.

7/ From end-2005 NPLs are loans with payments on which are overdue more than 60 days. Until 2004 NPLs are loans in Substandard, Doubtful and Loss loans categories.

8/ Credit registry data from 2005, therefore, it is considered as estimate of actual sectoral distribution.

**Table 10. Lithuania: Financial Sector Indicators, 2004–08**  
(In percent, unless indicated otherwise)

	2004	2005	2006	2007	Jan 2008
Private sector credit (year-on-year change) 1/	40.3	56.1	51.4	45.3	43.8
Claims on private enterprises (in billions of litas)	11.3	16.1	22.7	31.0	31.3
<i>of which:</i> share of foreign currency loans	64.8	67.9	58.2	58.8	60.4
Claims on private enterprises (year-on-year change)	24.6	42.6	41.1	36.5	55.2
Share of claims on private enterprises in total private sector credit	69.2	63.2	58.9	55.3	55.2
Claims on individuals (in billions of litas)	5.0	9.4	15.8	25.0	25.4
<i>of which:</i> share of foreign currency loans	42.8	54.7	43.9	49.8	52.4
Claims on individuals (year-on-year change)	96.0	86.6	69.2	58.0	55.2
Share of claims on individuals in total private sector credit	30.8	36.8	41.1	44.7	44.8
Share of foreign currency loans	58.0	63.1	52.3	54.8	56.8
Financial sector risk factors of deposit money banks					
Share of foreign currency private sector credit in total private sector	58.0	63.1	52.3	54.8	56.8
Share of foreign currency deposits in total deposits	27.0	28.0	22.4	22.5	23.9
Short-term private sector credit in percent of total private sector credit	81.1	84.5	86.2	86.2	86.1
Demand deposits in percent of total deposits	43.3	38.3	40.7	46.7	50.8
Total private sector credit (in billions of litai) 2/	16.3	25.5	38.5	56.0	56.8
Total resident deposits (in billions of litai) 2/	17.2	23.4	28.6	35.6	35.1
Average annual interest rate on litas loans to enterprises	5.7	5.0	5.0	7.9	8.6
Average annual interest rate on litas loans to households	6.4	5.8	5.2	8.4	8.7
Average apartment prices in old town Vilnius (average annual growth)	25.6	49.1	32.6	6	...

Sources: Bank of Lithuania and National Stock Exchange of Lithuania.

1/ Includes credit to private enterprises, households, and nonprofit institutions by monetary authorities, deposit money banks, and other banking institutions.

2/ From banking survey, including monetary authorities, deposit money banks, and other banking institutions.

**Table 11. Lithuania: Indicators of External and Financial Vulnerability, 2004–08**

	2004	2005	2006	2007	Latest	Date of
				Proj.	Actual	Observation
<b>Financial indicators</b>						
Broad money (year-on-year change in percent)	21.4	31.9	21.5	22.1	22.8	Jan. 2008
Broad money in percent of gross official reserves	249.4	268.7	239.7	242.6	241.1	Jan. 2008
Private sector credit (year-on-year change in percent)	40.3	56.1	51.4	45.3	43.8	Jan. 2008
<b>External indicators</b>						
Current account balance in percent of GDP	-7.7	-7.1	-10.8	-13.0	-12.3	Q3 2007
Exports of GNFS (in billions of U.S. dollars)	11.7	14.9	17.8	21.4	5.7	Q3 2007
Exports of GNFS (year-on-year change in percent)	23.2	26.6	19.5	20.3	23.2	Q3 2007
Imports of GNFS (year-on-year change in percent)	25.3	25.7	24.8	23.5	21.8	Q3 2007
Capital and financial account balance in percent of GDP	6.3	10.0	16.8	18.2	21.4	Q3 2007
Gross official reserves (in billions of U.S. dollars) 1/	3.6	3.8	5.8	7.0	6.5	Q3 2007
Gross official reserves/short-term debt 2/	...	0.6	0.6	0.6	0.4	Q3 2007
Gross official reserves/short-term debt 3/	1.0	0.8	1.0	1.1	0.9	Q3 2007
Gross official reserves/reserve money	128.0	122.8	140.2	139.7	152.0	Jan. 2008
Gross official reserves in months of imports of GNFS over the	2.6	2.2	2.7	2.6	2.4	Q3 2007
Total gross external debt (in billions of U.S. dollars)	10.6	12.7	19.1	25.2	25.8	Q3 2007
in percent of GDP	47.3	49.3	64.1	65.8	67.3	Q3 2007
<i>of which:</i> Public sector debt (in billions of U.S. dollars)	3.1	2.9	4.0	4.7	3.9	Q3 2007
in percent of GDP	13.9	11.2	13.4	12.3	10.2	Q3 2007
<i>of which:</i> Short-term external debt (in billions of U.S. dollars) 3/	3.8	4.9	5.7	6.5	7.3	Q3 2007
in percent of GDP	16.7	18.9	19.1	17.1	19.0	Q3 2007
Total net external debt (in billions of U.S. dollars) 4/	3.3	4.0	6.3	10.9	10.7	Q3 2007
in percent of GDP	14.6	15.4	21.1	28.5	27.8	Q3 2007
<i>of which:</i> Public sector debt (in billions of U.S. dollars)	3.0	2.7	3.9	4.7	3.8	Q3 2007
in percent of GDP	13.2	10.7	13.1	12.3	10.0	Q3 2007
Total net external short-term debt (in billions of U.S. dollars) 5/	1.4	2.1	2.5	3.2	3.6	Q3 2007
in percent of GDP	6.4	8.4	8.4	8.5	9.4	Q3 2007
Real effective exchange rate (year-on-year change in percent, "+" = appreciation) 7/	-0.2	-1.7	0.3	3.4	3.4	2007
<b>Financial market indicators</b>						
Stock market index, end of period 8/	289	449	493	514	490	March 4, 2008
Foreign currency debt rating 9/	A-	A	A	A	A-	March 2008
<b>Memorandum item:</b>						
Nominal exchange rate (litai/U.S. dollar, end-of-period)	2.9	2.9	2.6	2.4	2.3	March 5, 2008
Nominal exchange rate (litai/euro, end-of-period)	3.5	3.5	3.5	3.5	3.5	March 5, 2008

Sources: Bank of Lithuania, Ministry of Finance, Department of Statistics, National Stock Exchange of Lithuania, Bloomberg, Information Notice System, and IMF International Financial and Trade Statistics.

1/ Gross official reserves reported here differ from the monetary table due to valuation differences.

2/ On a remaining maturity basis, estimated as short-term debt at year-end plus amortization of medium- and long-term debt of the following year.

3/ On an original maturity basis.

4/ Gross external debt minus debt securities held abroad and other investments abroad.

5/ Short-term gross external debt excluding trade credits and currency and deposits held abroad.

6/ Debt service comprises interest and repayment on external loans, and interest and repayment on debt securities.

7/ CPI-based REER against the 17 major trading partners in 2000.

8/ VILSE index.

9/ S&P foreign currency sovereign rating.

#### APPENDIX IV. THE LITHUANIAN FINANCIAL SYSTEM: STRUCTURE AND SUPERVISORY FRAMEWORK

54. **The Lithuanian financial system is centered around the banking sector and is dominated by three foreign-owned banks** (Tables 12–14). The banking sector comprises nine banks—of which six are subsidiaries of foreign banks—and two branches of foreign banks. Foreign entities account for around 93 percent of the sector’s assets; Swedish banks together account for around 62 percent of the sector’s assets. The three largest banks (SEB Vilniaus Bankas, Hansabankas, and DnB NORD Bankas) account for around 69 percent of banking sector assets and also have a substantial share of non-bank financial sector assets. The three banks generated three quarters of the 2006 credit growth. All three banks are owned by foreign banks with A+ Standard and Poor’s credit ratings.

55. **The non-bank financial sector is still very small but has been growing in recent years. Until recently, leasing has been the largest segment of the non-bank sector, growing at an average rate of 48 percent a year over the last six years.** More recently, since their introduction in 2004, second pillar pension schemes accumulated assets at a rapid rate. Compulsory motor third-party liability insurance, introduced in June 2001, and the introduction of UCITs in November 2004 have also contributed to the growth of the nonbank financial sector. Finally, the rapid growth of mortgage loans has spurred the growth of mortgage insurance.

##### Leasing sector

56. **There are 12 leasing companies currently operating in Lithuania, all subsidiaries of banks.** The total portfolio as of July 1, 2007 was 8.4 billion litas or around 10 percent of GDP. Two of the largest leasing companies, Hansa Leasing and SEB Leasing, dominate the market with 42 percent and 36 percent of the market share, respectively. Funding of these two companies is mostly in euros but also in other currencies, notably in U.S. dollars and leasing contracts are mostly drawn in these two currencies.

57. **Financial leasing is the most used form of leasing (95 percent of all contracts) and is largely to the corporate sector.** Leasing companies do not finance household mortgages largely because of taxation reasons: corporate real estate is subject to a 1 percent real estate tax whereas residential real estate is not subject to such tax, making it unattractive for households. Additionally, the relatively short maturity of leasing loans (10 year maturities at most) renders these loans less attractive to households; banks provide mortgage maturities up to 30-40 years.

##### Pension sector

58. **A major pension reform was undertaken in 2002 with the approval of legislation on a three-pillar scheme.** The second pillar started operating in 2003 and the third in late 2004. Participation in the second pillar is voluntary. Workers may decide to shift part of their contributions from Pillar 1 to Pillar 2 (5.5 percentage points out of the total 25 percent of income contribution towards Pillar 1), or keep the total contribution of 25 percent in Pillar 1. Despite the

voluntary nature of Pillar 2, approximately 60 percent of the working population of 2.8 million was covered by a second-pillar plan at the end of 2006. The third pillar, however, has attracted less enthusiasm, but the government has introduced recently tax advantage for all third pillar savings. Currently, 16 second pillar and six third pillar pension funds operate in the country, with total assets of around 280 million litas (81 million euros).

59. **Some innovative elements were introduced in the second pillar pension system.** The second pillar operates as a defined contribution system with individual accounts, under a flexible framework allowing investment fund managers and insurance companies to manage pension funds. In addition, the design of the pension system does not include minimum performance measures, such as a minimum return guarantee, and provides incentives toward international portfolio diversification and portfolio differentiation.

### **Supervisory framework**

60. **The BoL is the banking sector's supervisory authority.** It has a mandate to conduct both individual and consolidated supervision of banks licensed by the BoL and their financial groups, including domestic banks' foreign subsidiaries.

61. **Leasing companies are governed by provisions of the Law on Financial Institutions and the Civil Code, but they are not regulated or supervised except when they are subsidiaries of banks.**

62. **Securities market intermediaries are regulated and supervised by the Lithuanian Securities Commission,** including financial brokerage firms, departments, and brokers; management companies, collective investment undertakings, pension funds, stock exchanges, the Central Securities Depository, as well as listed and non listed public and private issuers, and EU cross-border firms. The Securities Commission joined the IOSCO in 1996.

63. **The Insurance Supervisory Committee is responsible for the supervision of insurance companies.** However, in line with EU Directives, financial supervision of insurance undertakings of other EU member states, providing their services in Lithuania, or of branches of such undertakings established in the Republic of Lithuania is carried out by a competent authority of this EU member state. Hence, the ISC does not supervise them, but it coordinates with foreign supervisors.

### **State mortgage insurance**

64. **The state mortgage insurance covers mortgages which are extended under certain riskier conditions (i.e., no down payment, overall debt service-to-income ratio above 50 percent, irregular income).** NPLs on insured mortgages (20 percent of mortgage loans outstanding) are similar to the market average, which reflects sound eligibility criteria and the general price appreciation. However, it also signals that the "social" objective of the insurance may be losing ground, as confirmed by the decreasing share of moderate income borrowers to

whom the government subsidizes insurance premiums. Thus, it could be argued that today the mortgage insurance is mainly a form of protection against the systemic risk linked to the geographic concentration of lenders' portfolios. This risk, borne in last resort by the state, is partially funded (i) by loan loss reserves built on risk-based premiums that exceed by far the very small number of indemnification claims received up to now by the company (premium liabilities amount to about LTL 65 million, or 2.2 percent of the aggregate exposure), and (ii) by the capital of the company, recently increased to LTL 33 million. Depending on the share of reserves that can be considered as capital, the fund's capital-to-risk ratio is 2.5-3 percent, close to that to the American FHA (about 4 percent) but much higher than the Dutch public Home Ownership Guarantee Fund (0.5 percent). Private mortgage insurers have higher ratios—10 percent typically, one of the differences with state-owned insurers being the implicit assumption that governments would bear catastrophic risks.

### **Deposit insurance**

65. **Deposit insurance coverage have been brought in line with the EU Directive of May 1994 (94/19/EC) on Deposit Guarantee Schemes.** Deposits are covered by explicit deposit insurance as laid down in the Law on Insurance of Deposits and Liabilities to Investors that entered into force on July 1, 2002. Deposit insurance coverage is provided to deposits in litas, US dollars, and EU and EEA currencies.<sup>31</sup> On January 1, 2008, coverage was increased to 100 percent up to deposits equivalent to 3,000 euros, and 90 percent for deposits equivalent to 3,000 euros up to 22,000 euros (that is, from the current coverage of 60,000 litas to 77,000 litas), bringing total coverage in line with the EU Directive on Deposit Guarantee Schemes.<sup>32</sup> Insurance premiums will remain unaltered at 0.45 percent of deposits. The Deposit Insurance Law ensures that coverage is at the minimum EU level for all banks operating in Lithuania.<sup>33</sup> Insurance premiums are paid ex ante into the deposit insurance fund and differ between commercial banks and credit unions.<sup>34</sup> Euro deposits are covered by the deposit insurance scheme but paid out in litas. The deposit insurance fund covers insured deposits when bankruptcy proceedings are initiated for a given bank that has been declared insolvent. Insolvent banks can also be transferred to the DIF for restructuring purposes in which case the DIF becomes the new owner of the bank and the bank remains open.

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<sup>31</sup> Insurance coverage is 100 percent of deposits up to 10,000 litas and 90 percent of deposits from 10,000 litas up to 60,000 litas.

<sup>32</sup> Insurance coverage is per depositor per bank.

<sup>33</sup> Branches of foreign banks from EU countries are covered by deposit insurance in their home countries. Branches of foreign banks from non-EU countries are required to join the Lithuanian deposit insurance scheme on a mandatory basis if deposits are not insured in the home country or coverage is lower in the home country. In the latter case, the branch receives supplementary insurance to make up the difference in coverage between the home and host country. Subsidiaries of foreign banks join the Lithuanian deposit insurance scheme on a mandatory basis.

<sup>34</sup> The annual rate of insurance premiums is 0.45 percent for commercial banks and branches, and 0.2 percent for credit unions.

**Table 12. Lithuania: Total Assets of Financial Market Participants, 2003–06**  
(In millions of LTLs)

Institutions	2003	2004	2005	2006 1/	Growth (2005–06) 2/
Commercial banks	22,031	29,151	44,849	52,577	17.2
Credit unions	155	230	379	462	21.8
Leasing companies	2,976	4,399	5,930	...	...
UCITS	...	161	398	602	51.3
Life insurance	401	595	838	1,059	26.4
Non-life insurance	1,010	1,090	1,233	1,409	14.2
Second pillar pension funds 3/	0	127	410	770	87.8
Third pillar pension funds 4/	0	11	37	47	28.7
Stock brokerage enterprises	...	79	111	143	29.1
Management enterprises	...	25	33	45	35.8

Source: Statistics Lithuania

1/ End of Q3 data.

2/ In percent.

3/ Pension funds accumulating a part of social security contribution.

4/ Pension funds accumulating supplementary voluntary pension contribution.

**Table 13. Lithuania: Number of Financial Intermediation Enterprises, 2003–06**

Institutions	2003	2004	2005	2006 1/
Commercial banks	13	12	12	14
Credit unions	58	62	65	68
Leasing companies	20	18	15	16
Collective investment undertaking	0	10	19	24
Life insurance companies	9	9	8	8
Non-life insurance companies	19	19	17	15
Pension funds	0	34	34	36
Stock brokerage enterprises	...	16	14	12
Management enterprises	...	9	10	13

Source: Statistics Lithuania, and ISC

1/ Provisional data. For banks and credit unions, data is as of end-2007.

**Table 14. Lithuania: Ownership of the Banking System, end-2007**

Bank	Owner	Legal form	Share in total banking sector assets (in percent)
SEB Vilniaus Bankas	Skandinaviska Enskilda Banken AB (Sweden)	Subsidiary	30.49
Hansabankas	Hansapank (Estonia); ultimate owner: Swedbank AB (Sweden)	Subsidiary	23.94
DnB NORD Bankas	DNB NOR Bank ASA (Norway)	Subsidiary	13.13
Snoras Bankas	Mr. Vladimiras Antonovas (68.7 percent)	Domestic	7.11
Nordea Bank Finland Plc	Nordea Bank Finland Abp (Finland); ultimate owner:	Branch	6.95
Lietuvos skyrius	Nordea Bank AB (Sweden)		
Sampo Bankas	Danske Bank (Denmark))	Subsidiary	6.80
Ukio Bankas	Mr. Vladimir Romanov (33.0 percent)	Domestic	4.96
Siauliu Bankas	EBRD (16.1 percent)	Domestic	2.49
Parex Bankas	Parex banka (Latvia)	Subsidiary	1.99
AS "UniCredit Bank" Lietuvos skyrius	AS "UniCredit Bank" Latvija	Branch	1.13
UAB Medicinos Bankas	Mr. Saulius Karosas (85.86percent)	Domestic	0.87
MP Investment Bank hf. filialas Baltijos šalyse	MP Investment Bank hf. (Iceland)	Branch	0.12
Balti Investeeringute Grupi Pank AS filialas	Balti Investeeringute Grupi Pank AS (Estonia)	Branch	0.02

Source: Bank of Lithuania.

**Table 15. Features of Deposit Insurance Schemes in Europe**  
(Data as of 2003, unless otherwise noted)

Country	Date Enacted	Coverage Limit	Coverage Limit to GDP per capita (2002)	Co-insurance (in %)	Permanent Fund (1=Yes; 0=No)	Target Fund Size (% of deposits)	Annual Premiums (% of base)
Albania	2002	700,000 Lek	3.30	15	1		0.50
Austria	1979	20,000 EUR	0.75	10	0	n.a.	ex post risk based:
Belarus	1996	2,141,000 RBL	0.75	20	1	5.0	0.1 to 0.3
Belgium	1974	20,000 EUR	0.79	10	1	0.42	0.06
Bosnia-Herzegovina	1998	5,000 Markas	1.77	0	1		0.30 risk based:
Bulgaria	1995	15,000 BGL	2.43	0	1	5.0	0 to 0.5
Croatia	1997	100,000 HRV	2.48	0	1	5.0	0.80
Cyprus	2000	20,000 EUR	2.48	10	1		n.a.
Czech Rep.	1994	25,000 EUR	3.55	10	1		0.10
Denmark	1988	300,000 DKr	1.18	0	1		0.20
Estonia	1998	100,000 EKK	0.50	10	1	2.0	0.28
Finland	1969	150,000 FIM	0.93	0	1	2.0	risk based: 0.05 to 0.3
France	1980	70,000 EUR	2.74	0	0	n.a.	on demand
Germany 1/	1998	20,000 EUR	0.78	10	1	3.0	0.03
Greece	1993	20,000 EUR	1.51	0	1		0.025 to 1.25 risk based:
Hungary	1993	3,000,000 Ft	0.60	0	1	1.5	0 to 0.3
Iceland	1985	2,091,000 ISK	0.72	0	1	1.0	0.15
Ireland	1989	20,000 EUR	0.60	10	1		0.2
Italy	1987	103,291 EUR	4.75	0	0	n.a.	ex post risk-based: 0.4 to 0.8
Latvia	1998	3,000 Lat	1.35	0	1		0.20
Lithuania	1996	45,000 LTL	3.09	10	1	4.0	0.45
Lithuania (2007)	1996	60,000 LTL	2.20	10	1	4.0	0.45
Lithuania (2008)	1996	70,000 LTL	2.60	10	1	4.0	0.45
Luxembourg	1989	20,000 EUR	0.40	10	0	n.a.	ex post risk-based:
Macedonia	1996	20,000 EUR	10.27	10	1	5.0	1 to 5
Malta	2003	20,000 EUR	n.a.	0	1		0.10
Netherlands	1979	20,000 EUR	0.73	0	0	n.a.	ex post
Norway	1961	2,000,000 NOK	5.97	0	1	1.5	0.01 (plus 0.005 of assets)
Poland	1995	22,500 EUR	3.63	10	1		0.4
Portugal	1992	25,000 EUR	1.94	0	1		risk-based: 0.08 to 0.12

Country	Date Enacted	Coverage Limit	Coverage Limit to GDP per capita (2002)	Co-insurance (in %)	Permanent Fund (1=Yes; 0=No)	Target Fund Size (% of deposits)	Annual Premiums (% of base)
Romania	1996	125,222,000 lei	1.62	0	1		risk-based: 0.3 to 0.6
Russia	2003	179,600 rubles	n.a.	50	1	5.0	0.60
Serbia and Montenegro	2001	5,000 Dinar	0.05	0	1		n.a.
Slovak Republic	1996	20,000 EUR	2.77	10	1	1.5	0.1 to 0.3
Slovenia	2001	5,100,000 tolar	1.59	0	0	n.a.	on demand
Spain	1977	20,000 EUR	1.19	10	1	1.0	0.2
Sweden	1996	250,000 SEK	0.95	0	1	2.5	risk-based: 0 to 0.5%
Switzerland	1984	30,000 SFR	0.52	0	0	n.a.	on demand
Ukraine	1998	1,500 UAH	0.26	0	1	10	0.5
United Kingdom	1982	£35,000	1.97	10	0	n.a.	on demand

Notes: Moldova adopted deposit insurance in 2004 but is excluded from the table. N.a. denotes not available.

Source: Asli Demirguc-Kunt, Edward Kane and Luc Laeven (forthcoming), Deposit Insurance around the World: Issues of Design and Implementation, Cambridge, MA: MIT Press.

1/ The 1998 official scheme is an official scheme covering private banks introduced in 1998 to ensure consistency with EU directives. However, in addition to the official deposit insurance scheme, Germany also has a private deposit insurance scheme funded by the banks with a coverage limit of 30 percent of bank's equity capital per depositor. This scheme was set up in 1966 and revised after the Herstatt bankruptcy in 1974.

**APPENDIX V. PRUDENTIAL AND SUPERVISORY MEASURES IMPLEMENTED BY THE LITHUANIAN  
AUTHORITIES TO MITIGATE CREDIT RISK**

Area	Implemented Measure
Regulatory	<ul style="list-style-type: none"> <li>• Established limits on proportion of retained profits of the current year to be included in banks' capital base (end-2006). Particularly:               <ul style="list-style-type: none"> <li>➢ 60 percent of retained profits could be included after confirmation of profit by an independent audit firm; and</li> <li>➢ 30 percent could be included after BoL's review of the banks' financial statements.</li> </ul> </li> <li>• Provided guidance to banks to include the cyclical nature of the real estate prices and the potential increase in interest rate in evaluating borrowers credit worthiness (2006).</li> <li>• Tightened (in 2006) the definition of mortgaged residential property that deserve a 50 percent risk weight by:               <ul style="list-style-type: none"> <li>➢ Excluding loans to legal entities (limiting the definition to loans to individuals);</li> <li>➢ Including only loans that are fully secured by the residential property;</li> <li>➢ Excluding loans that carry a loan-to-value ratio greater than 70 percent of the market value of the property.</li> <li>➢ Excluded loans would generally be attached a risk weight of 100 percent.</li> </ul> </li> <li>• Postponement of planned reduction of reserve requirements (currently remains at 6 percent).</li> <li>• Higher minimum CARs are imposed on some banks at the discretion of the BoL.</li> </ul>
Supervisory	<ul style="list-style-type: none"> <li>• The Bank of Lithuania endorsed General Provisions on Stress-testing in 2001 and recommended banks to apply this risk management method and to include it in general risk management policy. Banks perform these tests periodically, at least once a year and assess risk both on a bank and a banking group level. The Bank of Lithuania analyses banks' results on stress-testing on the main types of risks (credit, market, liquidity, operational, etc.). This helps assess what type of risks has the most negative impact on banks and to what extent unfavorable conditions in the market could affect banks' capabilities for meeting their financial liabilities on time. The tests assist the authorities in determining the necessary minimum capital requirements.</li> <li>• Continuous monitoring of bank activities (regular and relatively frequent bank inspections). Attention is mostly paid to analysis of changes in banking loan portfolio and its quality. Also, discussions with banks are held about tendencies of their loan portfolio growth. During bank inspections more attention is paid to credit risk management, proper loan insurance, evaluation of its right value.</li> <li>• Increasing cooperation with home supervisors of foreign-owned banks. Following the conclusion of cooperation agreements, information exchange is proceeding regularly. Home supervisors responsible for consolidated supervision also assess risks of subsidiaries operating in</li> </ul>

	<p>Lithuania on a group level.</p> <ul style="list-style-type: none"> <li>• Strengthen banks' capital base: a portion of banks' 2005 profits is allocated to required and other reserves while a large portion is kept with banks as retained earnings.</li> </ul>
Market development	<ul style="list-style-type: none"> <li>• More information on solvency and business categories is collected in the credit registry for risk assessment and management purposes. The Rules for Managing the Loan Risk Database were specified at the end of 2005, where additional information on debtors is collected. Accordingly, banks granting new loans can get full information about debtor's creditworthiness.</li> </ul>
Outreach	<ul style="list-style-type: none"> <li>• Public statements by BoL officials on risks related to the housing boom. The Bank of Lithuania has sent a letter to banks emphasizing that banks should pay more attention to credit risk management and make enough reserves in order to amortize expected losses.</li> <li>• Intensive consultations with banks regarding preparation for implementation of the Basel II, CAD III and internal ratings based risk assessment measures. Individual meetings with banks regarding implementation of CAD III are proceeding regularly. Also, there is active cooperation with home supervisors on IRB application. The legal basis for the implementation of CAD III is under preparation, in coordination with banks.</li> </ul>

## APPENDIX VI. BANKING SYSTEM STRESS TESTING

66. **A combination of bottom-up and top-down stress tests were conducted to assess the impact of credit risk, market risk, and liquidity risk on the stability of the banking system.**

Details on the assumptions underlying each of these stress tests and the different scenarios employed are described in this Appendix.

67. **A top-down stress testing exercise was conducted to assess the resilience of the major Lithuanian banks to credit risk.** The stress testing exercise covered the five largest banking groups, which represent roughly 83 percent of the system's assets.<sup>35</sup> Bottom-up stress tests were also conducted by the three largest banks to measure portfolio credit risk. In the top-down stress test, the mission and BoL used methodologies developed by the Fund.<sup>36</sup>

68. **The credit risk stress test was based on a central scenario that incorporated a hard landing event** (Box 1). The scenario (scenario 1) involved a boom-bust in real estate prices and credit coupled with a strong increase in litas and euro lending rates. Additional scenarios were also included to evaluate the resilience of the banking sector to changes in the exchange rate. These scenarios involved an external financing crisis resulting in exchange rate change of -30 percent (scenario 2); and exchange rate revaluation resulting from a desire to reduce inflation (scenario 3). The scenarios were based on specific assumptions about key variables to be shocked and were simulated using the BoL's macroeconomic model (Table 16).<sup>37</sup> The second scenario involved a sharper drop in real estate prices and a stronger interest rate shock than scenario 1. Assumptions on key variables were based on Lithuania's historical experience, cross-country crisis experiences, and value judgment.

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<sup>35</sup> The participating banks are SEB Vilniaus, Hansabankas, DnB NORD, Snoras, and Sampo Bankas.

<sup>36</sup> The methodology is based on Segoviano (2006a, b), Segoviano and Padilla (2006), and Segoviano and Goodhart (2007).

<sup>37</sup> Macroeconomic scenarios have the advantage of providing an internally consistent combination of shocks to macroeconomic variables.

### **Box 1. Stress Tests—Macroeconomic Scenarios**

#### **Scenario 1. Boom-bust in real estate prices and private sector credit plus a strong increase in European interest rates.**

The growing level of indebtedness in the economy associated with the credit boom, coupled with rising inflation and current account deficits, worry investors. The boom turns into a bust. Agents revise their expectations of asset prices resulting in a fall in real estate demand. The construction sector starts facing losses. Parent banks impose stricter limits on refinancing for subsidiaries and branches operating in Lithuania; hence, litas and euro lending rates increase (by 500 bps and 600 bps, respectively). Interest rate increases not only provoke a negative effect on household and corporate sector solvency—due to an increased burden of debt servicing—they also reinforce the negative reassessment of asset values and housing prices fall considerably (by 50 percent). Economic activity is depressed. Lower economic activity, rising unemployment, higher debt-service burdens, and lower collateral values affect agents' ability to service their loans. NPLs and loss-given-default on private sector loans increase significantly.

#### **Scenario 2. An external financing crisis resulting in exchange rate change of -30 percent.**

Turmoil in global financial markets or in the region and rising current account deficit result in a reassessment of risk in Lithuania. Parent banks reduce subsidiary financing, which results in significant monetary tightening and finally forces the authorities to depreciate the litas against the euro by 30 percent. This scenario implies a sharper drop in real estate prices and a stronger interest rate shock than scenario 1. Higher interest rates and the devaluation of the litas raise the debt-service burden of households, particularly in view of the high share of euro loans in banks' portfolios, and results in an increase in the household default rates and higher NPLs. Higher NPLs and market volatility instigate a further reassessment of Lithuanian risk; risk premiums charged to Baltic subsidiaries increase further. These developments lead to a further contraction in credit and a fall in aggregate demand. The effect on banks' portfolios under this scenario is expected to be more severe than that envisaged in scenario 1.

#### **Scenario 3. Exchange rate revaluation resulting from a desire to reduce inflation and validated by foreign investors' appetite for litas-denominated assets.**

This scenario assumes that the authorities choose to address rising inflation by allowing the currency to float, which is validated by foreign investors' appetite for litas-denominated assets leading to a 30 percent revaluation of the currency. Ultimately, the revaluation leads to a loss of external competitiveness. The trade balance deteriorates and GDP falls. A negative shift in expectations affects private consumption and depresses economic activity further. These developments have a negative impact on banks' NPLs, increasing banks' losses. GDP contraction is not expected to be as severe as that envisaged in scenario 2.

**Table 16. Lithuania: Key Variables and Assumptions for the Macro Scenarios**

Date	3-m Vilibor (In percent)	LTL/Euro (increase = devaluation)	Real GDP mln LTL	Unemployment rate (In percent)	Private Sector Credit in Percent of GDP	Real Estate Price Index
<b>Baseline</b>						
2006	3.1	3.5	71,569.31	5.6	50.5	2,274.6
2007	4.9	3.5	77,670.97	4.3	50.5	2,274.6
2008	5.5	3.5	83,434.62	4.2	50.5	2,274.6
2009	5.5	3.5	88,027.95	4.3	50.5	2,274.6
<b>Scenario 1: Deviations from Baseline</b>						
	(pps)	(%)	(%)	(pps)	(%)	(%)
2006	0.0	0.0	0	0.0	0	0.0
2007	5.0	0.0	-6.4	1.7	-16	-16
2008	5.0	0.0	-9.6	5.0	-35	-33
2009	5.0	0.0	-9.6	6.9	-55	-50
<b>Scenario 2: Deviations from Baseline</b>						
	(pps)	(%)	(%)	(pps)	(%)	(%)
2006	0.0	0.0	0	0.0	0	0.0
2007	13.0	30.0	-4.1	1.0	-35	-23
2008	13.0	30.0	-8.9	3.3	-67	-47
2009	13.0	30.0	-11.2	5.5	-100	-70
<b>Scenario 3: Deviations from Baseline</b>						
	(pps)	(%)	(%)	(pps)	(%)	(%)
2006	0.0	0.0	0	0.0	0	0.0
2007	5.0	-30.0	-7.8	2.1	0	-3
2008	5.0	-30.0	-8.1	5.2	-12	-6
2009	5.0	-30.0	-5.2	5.3	-22	-10

69. **A bottom-up market risk stress test based on single factor shocks was carried for the three largest banks in the system.** The single factor shocks considered include shocks to interest rates (inversion and parallel shifts of the yield curve), foreign exchange shocks (revaluation and devaluation of the Lithuanian currency compared to the euro), and shocks to equity prices and real estate prices. Table 17 summarizes the different scenarios and the main assumptions underlying the market stress test. For each shock, the bank provided estimates of expected losses arising from the shock considered (both for the trading book and the banking book) and the impact of these losses on bank capital. In the case of interest rate shocks, losses were computed based on the sensitivities of each asset in the bank's portfolio to interest rate changes (also known as a gap analysis). Estimates of these interest rate sensitivities were based on a duration model. All assets of the trading book were revalued following this approach. In the banking book, only tradable assets (mostly bonds) were revalued following this approach. Both

on-balance sheet and off-balance sheet items were taking into account. The impact on bank profits of a change in net interest income arising from interest rate shocks was not taking into account. Top-down stress tests covering the whole sector were also carried out to evaluate exchange rate risk.

**Table 17. Lithuania: Assumptions of Market Risk Stress Tests**

<b>Scenario 1</b>	
Positive interest rate shock	Parallel shift in the yield curve of +5 percent
<b>Scenario 2</b>	
Negative interest rate shock	Parallel shift in the yield curve of -2 percent
<b>Scenario 3</b>	
Inversion of yield curve	Parallel shift in the yield curve of +5 percent for maturities up to 5 year and parallel shift in the yield curve of -2 percent for maturities over 5 year
<b>Scenario 4</b>	
Devaluation of currency	Devaluation of the litas against the euro of 30 percent
<b>Scenario 5</b>	
Revaluation of currency	Revaluation of the litas against the euro of 30 percent
<b>Scenario 6</b>	
Asset price bubble	Reduction in equity prices by 60 percent
<b>Scenario 7</b>	
Real estate bust	Reduction in real estate prices by 50 percent

70. **Top-down liquidity stress tests were conducted to evaluate risks arising from deposit withdrawals or reduction in parent bank funding.** Table 18 summarizes the main assumptions underlying the different scenarios considered. Liquidity effects resulting from various liquidity shocks were assumed to take place immediately. Tests did not allow for banks' to obtain liquidity support from the domestic interbank market, parent banks or the central bank and calculations assumed that banks' would depend solely on their existing liquid assets to absorb the liquidity shocks.

71. **Liquidity needs were therefore met through the sale of liquid assets.** Cash; funds held at the central bank; funds held at Lithuanian and A group countries banks, credit and financial institutions coming due within 1 month;<sup>38</sup> and foreign bonds and debt securities were assumed to liquidated at their full value, whereas other liquid assets, including domestic bonds and

<sup>38</sup> The liquidity stress tests do not apply different haircuts on deposits held at foreign banks and deposits held at domestic banks because there is no accurate data on the breakdown for these liquid assets on a bank-by-bank basis. However, for the system as a whole the amount of liquid assets held at other domestic banks is small, so this should not affect the analysis conducted.

government securities would be liquidated at 50 percent of their value. The sale of liquid assets was proportional to its composition at the reference date. The composition of liquid assets and current liabilities are defined in the Bank of Lithuania Board Resolution No. 1 of January 29, 2004.

72. **Parent bank funding included funding from direct parent banks and ultimate parent banks and other foreign banks belonging to that particular banking group.** Given the small share of parent bank funding through subordinated loans (Table 19), subordinated loans were excluded.<sup>39</sup> The average risk weight of sold liquid assets was set at 20 percent. The loss from liquidation of assets directly affected the banks' capital.

73. **For scenario 2, it was assumed that resident deposits, foreign and nonresident deposits, as well as balances by foreign banks (other than parent banks) are withdrawn irrespective of the currency of denomination and maturity of these deposits.** Resident and non-resident deposits include firms (non-financial corporations and financial companies) and households (but the government is excluded). Domestic interbank deposits and loans (irrespective of the currency of denomination and maturity) are withdrawn in full. Deposit runs were assumed to occur immediately and therefore the immediate effects on the liquidity ratio were reported.

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<sup>39</sup> Subordinated loans constitute only 2 percent of total liabilities on average. The amount of subordinated loans coming due within 3 months (as of end of September 2007) is only 0.9 percent of total subordinated loans.

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