

### **Austria: Selected Issues**

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AUSTRIA

**Selected Issues**

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## I. FUNDING OF AUSTRIAN BANKS' CESEE SUBSIDIARIES AND ASSOCIATED RISKS

### A. Introduction

1. **In March 2012, the Austrian authorities introduced a new supervisory guidance aiming at constraining the funding model of the three largest Austrian banks' subsidiaries.** The guidance was part of a larger package of supervisory measures designed to improve the sustainability of these three banks' business model (see Box 3 of the 2012 Article IV Staff Report) and reflected the lessons learned from the recent boom-bust cycle in Central, Eastern and South Eastern Europe (CESEE), where the vast majority of Austrian banks' foreign subsidiaries are based. The authorities noted that “subsidiaries which exhibited high loan growth in boom times that were not backed by strong local stable funding were more vulnerable to credit risks during the ensuing crisis, which negatively affected the concerned banking groups and national economies”.<sup>1</sup>

2. **The guidance introduced the concept of Loan-to-Local-Stable-Funding Ratio (LLSFR), a variant of the Loan-to-Deposit Ratio (LDR), as a monitoring tool of business model sustainability.** The LLSFR is defined as the ratio of total loans to nonbanks (net of provisions) to the sum of deposits from nonbanks, funding from supranational institutions, capital from third parties, and securities with an original maturity of at least one year issued to investors outside the bank's consolidated group. The flow-LLSFR is defined as the ratio of the first difference of the LLSFR's numerator and to the first difference of its denominator. The Austrian authorities noted that Austrian banks' subsidiaries that entered the 2008–09 financial crisis with a LLSFR above 110 percent were significantly more likely to exhibit higher loan loss provisioning rates than those below that threshold. They concluded that a business model where a subsidiary's LLSFR is above 110 percent and the flow-LLSFR exceeds 110 percent “runs a high risk of not being sustainable and contributes to potential vulnerabilities in crisis situations”. Therefore, starting in 2012, subsidiaries' flow-LLSFR is being monitored; subsidiaries with both a LLSFR above 110 percent and a net loan flow greater than 1.1 times their net local stable funding flow on a year-on-year basis will receive particular supervisory attention.<sup>2</sup> Supervisory action, if warranted, will take place within the framework of supervisory colleges.

3. **Clearly, keeping LLSFRs under control in Austrian banks' subsidiaries helps curb liquidity and funding risks both at the banking group level and at the subsidiary level.** To the extent that the intra-group liquidity transfers to a subsidiary with a high LLSFR are funded on wholesale markets by the parent institution, containing subsidiaries' LLSFR

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<sup>1</sup> Further background on the guidance can be found at <http://www.fma.gv.at/en/companies/banks/special-topics/supervisory-guidance.html>

<sup>2</sup> If both numbers are positive, this implies a flow-LLSFR greater than 110 percent.

reduces the parent’s reliance on such markets and the associated liquidity and funding risk in times of high financial stress. At the subsidiary level, greater reliance on local stable funding also reduces a subsidiary’s vulnerability to cross-border liquidity shocks.

4. **This paper investigates the less immediate proposition suggested by the supervisory guidance that the LLSFR is also a useful *credit risk* vulnerability indicator.**

The analysis is based on a sample of all deposit-taking banks operating in CESEE and covered by the Bankscope database during the period 2005–10.<sup>3</sup> Because public information on some components of the LLSFR’s denominator is not available, we proxy the LLSFR by the LDR. Our specific goal is to examine the relationship between a bank’s LDR at the end of 2008 and the change in the quality of its loan portfolio in the subsequent two years. While we do not provide any theory and do not claim to test any causal relationship, a plausible mechanism through which the build-up of non-deposit funding (or “non-core liabilities” in the language of Shin and Shin, 2010) relates to asset quality is that the accumulation of non-deposit funding may be the symptom of the relaxation of credit standards and, in the context of intra-group funding, of inadequate internal pricing of risk.<sup>4</sup> At the macro level, such an erosion of the risk premium might go hand-in-hand with the development of macroeconomic imbalances and an increased vulnerability to a twin liquidity and currency crisis (see Hahm, Shin and Shin, 2012).

## B. Background

5. **Austrian banks’ subsidiaries have a significant market share in several CESEE countries and CESEE subsidiaries represent a significant share of the Austrian banking system total assets.** Several Austrian banks (mostly three large and two medium-sized banks) have affiliates in CESEE that are large relative to the size of many host countries’ banking systems (Figure 1)<sup>5</sup>. The importance of these subsidiaries has grown over time both in terms of share of total consolidated assets and in terms of share of operating profits of the Austrian banking system (Figure 2). At end-2011, they represented 23.2 percent of total assets (or 90 percent of Austrian GDP) and 66 percent of net operating profits.

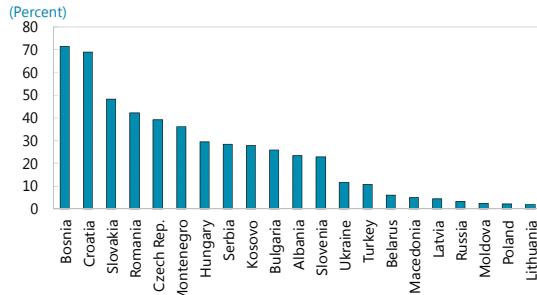
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<sup>3</sup> Some countries were dropped because of data quality and cross-country comparability issues. In particular, Russian banks are excluded from part of the analysis because the customer deposits data seem to follow a different definition from that in other countries in the region, leading to implausibly high LDRs. Bank Austria (a subsidiary of Italian bank Unicredit since 2005) and Hypo Group Alpe Adria (a subsidiary of German bank Bayerische Landesbank during 2007-2009) are considered “Austrian” throughout the whole period.

<sup>4</sup> This mechanism could in principle be investigated using detailed bank-level supervisory data.

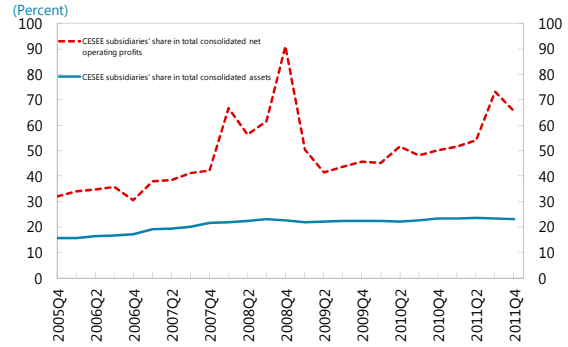
<sup>5</sup> One of the medium-sized banks sold all its CESEE bank subsidiaries but one to Russian bank Sberbank during 2012Q1.

**Figure 1. Austrian Banks Subsidiaries' Loan Market Share in CESEE Countries, 2011**



Sources: OeNB; IFS; Bankscope; and IMF Staff calculations.  
Notes: Data for Albania, Belarus, Macedonia and Poland are for 2010. No data for Estonia is available. The set of Austrian banks includes Bank Austria.

**Figure 2. Austrian Banks' CESEE Subsidiaries' Shares in Total Consolidated Banking Sector Assets and in Total Operating Profits, 2005Q4-2011Q4**



Source: OeNB.

6. **Austrian banks' subsidiaries grew fast during the boom of the last decade in CESEE.** The credit boom and the associated macroeconomic developments that took place in most of the CESEE region has been well documented (see, among others, Chapter 3 of IMF, 2010, or Bakker and Klingens, 2012). Most countries where Austrian banks are present witnessed annual real credit growth rates in excess of 20 percent during the years preceding the global financial crisis. While Austrian subsidiaries generally grew at the same pace as the market as a whole, they expanded more aggressively than the market in CIS countries, and some medium-sized Austrian banks also grew fast relative to their peers in South-Eastern Europe (Table 1).

Table 1. CESEE: Sub-Regions: Average Real Credit Growth, 2005-08  
(Annualized, in percent)

Sub-region	Bank type		Total domestic credit
	Large Austrian	Medium Austrian	
Central Europe	20.6 (11)	9.5 (4)	20.1
South-Eastern Europe	21.3 (15)	31.4 (15)	25.9
CIS ex-Russia	54.6 (3)	74.0 (1)	35.7
Russia	43.9 (2)	- (0)	36.7
Baltics ex-Estonia	17.4 (2)	- (0)	22.7

Sources: Bankscope; IFS; and IMF staff calculations.

Notes: Banks with a loan-to-deposit ratio above 1500 are excluded. The number of observations is in parenthesis. A correction for Austrian banks' acquisitions during 2006-2008 is made whenever possible. Central Europe includes Czech Republic, Hungary, Poland, and Slovakia. South-Eastern Europe includes Albania, Bosnia, Bulgaria, Croatia, Macedonia, Romania, Serbia, and Slovenia. CIS ex-Russia includes Belarus, Moldova, and Ukraine. Baltics ex-Estonia includes Latvia and Lithuania.

7. **Across most of the CESEE region, loan growth during the boom years relied on non-deposit funding, especially cross-border loans from parent and other Western European banks.** Austrian banks' growth in Central Europe relied mostly on traditional deposit sources, even if cross-border funding (including foreign currency swaps) was used to finance fast growing portfolios of Swiss Franc mortgages in Hungary and (to a lesser extent) Poland. In South-Eastern Europe and in CIS countries, loan growth was more unbalanced, with cross-border funding contributing more than local deposit funding to (fast) credit growth in some cases (Table 2) and enabling the financing of foreign currency loans.<sup>6</sup> Even if they have declined from their peak at end-2008, liquidity transfers by parent institutions still represented EUR 41.5 bn, or 15.3 percent of the consolidated balance sheet of CESEE subsidiaries at end-2011.

Table 2. CESEE: Sub-Regions: Median Flow Loan-to-Deposit Ratio, 2005-08  
(In percent)

Sub-region	Bank type		
	Large Austrian	Medium Austrian	Other
Central Europe	126.8 (11)	24.4 (4)	148.4 (64)
South-Eastern Europe	140 (14)	165.7 (14)	113.8 (113)
CIS ex-Russia	641.3 (3)	2748.6 (1)	151.7 (53)
Baltics ex-Estonia	175.8 (2)	- (0)	158.5 (27)

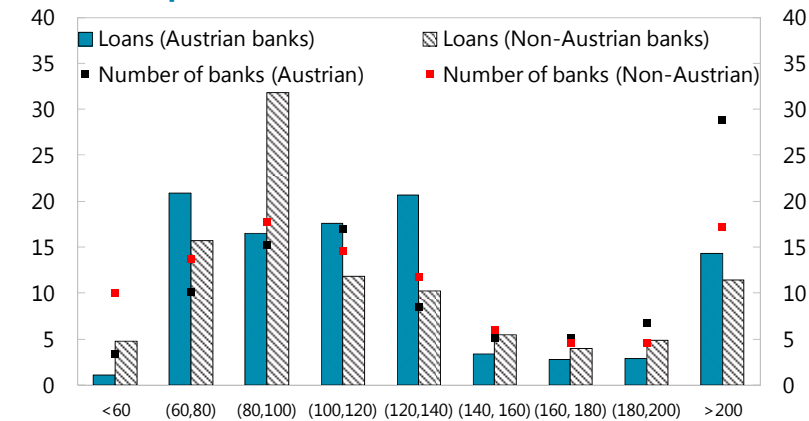
Sources: Bankscope; IFS; and IMF staff calculations

Notes: Banks with a loan-to-deposit ratio above 1500 are excluded. The number of observations is in parenthesis. Central Europe includes Czech Republic, Hungary, Poland, and Slovakia. South-Eastern Europe includes Albania, Bosnia, Bulgaria, Croatia, Macedonia, Romania, Serbia, and Slovenia. CIS ex-Russia includes Belarus, Moldova, and Ukraine. Baltics ex-Estonia includes Latvia and Lithuania.

8. **This development strategy led to high LDRs across the region.** At the end of 2008, only about 45 percent of Austrian banks' subsidiaries (representing 56 percent of Austrian banks' total loans in the sample) and 55 percent of non-Austrian banks (representing 64 percent of non-Austrian banks' total loans in the sample) had a LDR under 120. Austrian banks' subsidiaries with a LDR above 200 represented 14 percent of total loans by Austrian banks' subsidiaries in CESEE countries in the sample (Figure 3).

<sup>6</sup> See EBCI (2011).

**Figure 3. CESEE: Share of Banks and Total Bank Loans by Loan-to-Deposit Ratio Bucket, 2008 (Percent)**



Sources: Bankscope; and IMF staff calculations.

Notes: The sample covers 59 subsidiaries of Austrian banks, and 350 non-Austrian CESEE banks. Banks from Kosovo, Montenegro, and Russia as well as those with a loan-to-deposit ratio greater than 1500 or with negative customer deposit growth during 2005-2008 are not included.

9. **When the global crisis struck in the last quarter of 2008, the funding model of many CESEE banks was challenged, non-performing loans started rising fast, and several Austrian parent banks received government support.** Stress in global financial markets reduced considerably the availability of wholesale funding to western European banks; this, in turn, caused a dramatic reduction in cross-border flows available to CESEE banks. Furthermore, the collapse in aggregate demand, both domestic and external, affecting the CESEE led to a sharp deterioration of loan asset quality throughout the region. As many other advanced economies governments, the Austrian government stepped in and supported its banking system through capital injections, guarantees, and the nationalization of the sixth largest bank in 2009.

### C. Is the Loan-to-Deposit Ratio a Good Indicator of Credit Risk Vulnerability?

10. **Data from a large sample of CESEE banks indicate that a LDR in 2008 above the supervisory guidance's threshold is associated with higher credit risk materialization following the onset of the crisis.** The Austrian supervisory guidance refers to a LLSFR threshold of 110 percent. Although no historical LLSFR series is available, recent data points for Austrian banks suggest that a bank's LDR is about 10 percentage point higher than its LLSFR because the LLSFR includes other liabilities than customer deposits in its denominator.<sup>7</sup> We thus focus our analysis on a LDR threshold value of 120 percent. Simple regressions across all banks in the sample confirm (i) that there is a significant relationship between a higher LDR at end-2008 and greater asset quality deterioration in the

<sup>7</sup> The 10 percentage point difference is an average value with significant dispersion across individual subsidiaries.

two subsequent years (Table 3, column 1); and (ii) that banks with a LDR below 120 percent at end-2008 suffered a significantly smaller deterioration in their loan portfolio quality during 2008–10 compared to those with a LDR above 120 percent (Table 3, column 2).

**11. Even controlling for credit growth during the boom and for country-level factors, the positive relationship between LDR in 2008 and subsequent asset quality performance remains significant.** Because the country-level macro-financial vulnerabilities differed across the region at the onset of the global crisis and the policy responses during the bust also differed, one should expect that country-specific factors played a role in each individual bank’s performance during the bust. To control for these country-level effects, we add the deterioration in asset quality of the rest of the banking system in the country in which each bank operates to the regression. The results indicate clearly that, even if developments in the banking system as a whole played a determinant role, the LDR remains significant (Table 3, column 3). Nonetheless, even a bank that fully finances its loan book by local deposits can suffer a lot if it operates in a country engulfed in a banking crisis. In addition, Table 3’s column (3) also shows the absence of any statistically significant relationship between individual bank credit growth in the three years preceding Lehman and its asset quality performance during the bust when the LDR and country-level factors are included in the regression.<sup>8</sup>

**12. While a bank’s vulnerability seems to be higher on average if its LDR is higher, there does not seem to be any jump at the threshold value of 120 percent.** Controlling for the change in asset quality of other banks, the credit risk benefit of having a LDR below 120 percent was greater than that of having a LDR between 120 percent and 150 percent but the difference is statistically insignificant (Table 3, column 4). This finding suggests that from the pure perspective of containing credit risk, a LDR slightly in excess of the threshold set in the supervisory guidance may be acceptable.<sup>9</sup> Furthermore, the dispersion of performance at a given LDR is so large that a LDR below 120 percent cannot be assumed to be a guarantee of solidity (Figure 4).

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<sup>8</sup> This finding is robust to a correction for Austrian banks’ mergers and acquisitions during 2006-2008, or to a decomposition of individual bank credit growth between a “safe” part (financed only by customer deposits) and an “unsafe” part (financed by other types of liabilities).

<sup>9</sup> Because of lack of data availability at the time of the analysis, we are unable to include data for the change in asset quality during 2011. Yet, the loan loss provisioning rate kept deteriorating in 2011 in a number of CESEE countries, which leaves open the possibility that the contrast between the post-2008 performance of banks with a LDR smaller than 120 percent and those with a LDR in the (120 percent, 150 percent) range might be starker when a longer period is considered.



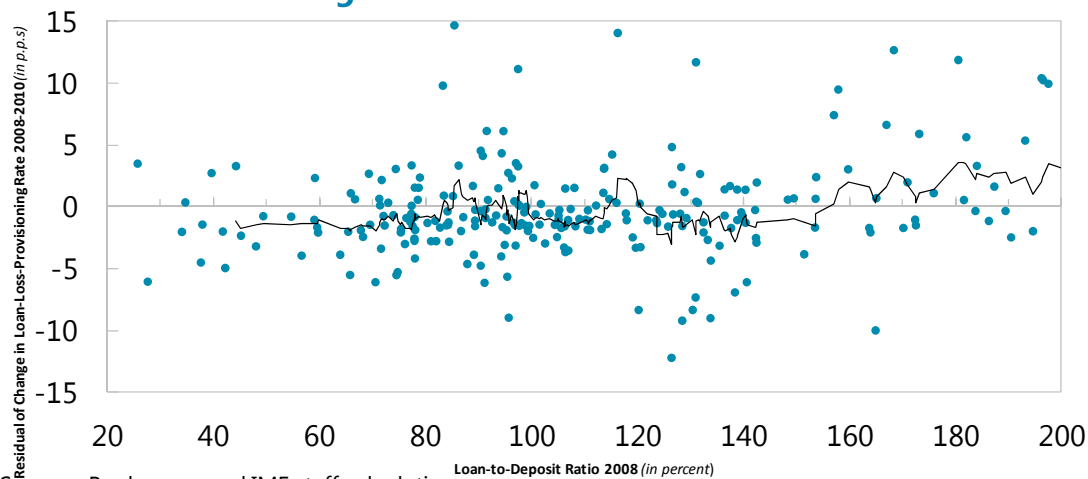
Table 3. CESEE: Determinants of Change in Banks' Loan Loss Provisioning Rate, 2008-10

	(1)	(2)	(3)	(4)
Constant	0.24 (0.69)	5.71 (0.00)***	-1.17 (0.06)*	3.51 (0.00)***
2008 LDR	0.026 (0.00)***		0.016 (0.00)***	
Dummy 2008 LDR <120		-3.38 (0.00)***		-3.37 (0.00)***
Dummy 2008 LDR in [120,150)				-3.60 (0.00)***
Real loan growth rate 2005-2008			0.00 (0.97)	
Other banks' change in LLP rate 2008-2010			0.89 (0.00)***	0.92 (0.00)***
R2	0.19	0.1	0.40	0.41
Adjusted R2	0.19	0.1	0.39	0.40
Number of observations	220	220	220	220

Sources: Bankscope; and author's calculations.

Notes: The dependent variable is percentage point change in loan loss provisioning rate between 2008 and 2010. Growth rates and the LDR ratio are in percent. P-values are in parentheses. Extreme outliers are excluded from the regression.

**Figure 4. CESEE : Banks' Loan-to-Deposit Ratio 2008 and Change in Loan-Loss-Provisioning Rate 2008-10**



Sources: Bankscope, and IMF staff calculations.

Notes: The residual of an ordinary least square regression of banks' change in loan-loss provisioning rate during 2008-2010 on the change in the loan-loss provisioning rate during 2008-2010 in the rest of the domestic banking system and a constant is shown along the vertical axis. The black solid line is a moving average of 10 observations. The sample includes banks in CESEE countries, except Estonia, Kosovo, Montenegro and Russia, which are excluded because of data quality and availability issues. Clear outliers were also excluded from the analysis. A small number of observations in the sample have a loan-to-deposit ratio above 200 percent and are not shown in the Figure.

13. **Looking now at possible indicators of country-level credit risk vulnerability, we find that both the aggregate LDR in 2008 and the aggregate credit growth rate during the boom are relevant (Table 4, column 1).** In particular, CESEE banking systems with an aggregate LDR under 120 percent in 2008 were less affected than those with a LDR above 120 percent, and the reduction in deterioration of asset quality is of greater size in the aggregate (about 5 percentage points) than at the individual level (about 3.4 percentage points; see Table 3). The credit risk benefit of having a LDR below 120 percent is also larger than that of having one between 120 percent and 150 percent but the difference is, again, not statistically significant (Table 4, column 2).

Table 4. CESEE: Determinants of Change in Aggregate Loan Loss Provisioning Rate, 2008-10

	(1)	(2)
Constant	-5.8 (0.00)***	4.7 (0.01)***
Dummy 2008 LDR <120		-4.9 (0.00)***
Dummy 2008 LDR in [120,150)		-4.1 (0.01)**
2008 LDR	0.056 (0.00)***	
Loan growth rate 2005-2008	0.09 (0.05)**	0.09 (0.06)*
R2	0.65	0.68
Adjusted R2	0.60	0.61
Number of observations	18	18

Sources: Bankscope; and author's calculations.

Notes: The dependent variable is percentage point change in loan loss provisioning rate between 2008 and 2010. Growth rates and the LDR ratio are in percent. P-values are in parentheses. All CESEE countries are included except Estonia, Kosovo, Montenegro, and Russia because of data quality issues.

#### D. Conclusion

14. **Evidence for CESEE banks suggests that the LLSFR is an appropriate tool to monitor the possible build-up of credit risk besides its more obvious role as an indicator of liquidity risk.** In a sample of CESEE banks, including many foreign bank subsidiaries, the change in banks' loan-loss provisioning rate in the two years following the Lehman Brothers bankruptcy (2008–10) is positively and significantly associated with the banks' LDR (a proxy for the LLSFR) at the end of 2008, even after controlling for aggregate factors and individual bank loan growth. A plausible reason for this association is that a high LLSFR may be a symptom of lax credit standards associated with an inappropriate internal pricing of risk. The use of the LLSFR as a vulnerability indicator related to credit risk in a supervisory context would then be warranted. Furthermore, CESEE countries that had a low aggregate LDR in 2008 witnessed a more modest deterioration in asset quality on average than those

that had a high aggregate LDR, indicating that keeping individual LDRs under control can have positive effects on aggregate credit risk. This latter finding is in line with Hahm, Shin and Shin (2012) who find that the level of “non-core liabilities” is related to the vulnerability to a financial crisis in emerging and developing economies.

15. **At the same time, the data suggest that this conclusion should be subject to a number of caveats with respect to the choice of a specific threshold to identify excessive credit risk taking.** First, the regressions suggest that aggregate (country-wide) factors also matter for the materialization of credit risk. Thus, the implementation of the LLSFR at the level of an individual subsidiary will not be a fool-proof guarantee against significant credit risk materialization because the funding model of the rest of the banking sector may be at least equally relevant. Second, the dispersion in the change in asset quality after the shock of end-2008 is large for any particular level of the LDR, suggesting that significant credit risk can also build up in banks with a low LDR. Third, a jump in the average deterioration in asset quality seems to take place at a somewhat higher level than the LLSFR threshold of 110 percent in the supervisory guidance. Thus, a less conservative threshold may be acceptable from the point of view of curbing credit risk, especially in countries where the aggregate LLSFR is reasonably low.

16. **In the end, the choice of a threshold must take into account the LLSFR’s properties as an early warning signal of both liquidity risk and credit risk and the need to protect the Austrian taxpayer.** Maintaining market access in times of high financial stress may require sovereign guarantees or public capital injections, and taxpayers of an international banking group’s home country have to foot that bill in the absence of burden-sharing agreements with host countries. Until such burden-sharing agreements come into existence, capping subsidiaries’ LLSFRs also means capping Austrian taxpayers’ contingent liabilities. For those subsidiaries which currently have a high LLSFR, the transition to more reasonable levels needs to avoid disruptive deleveraging in the host countries. The guidance on the flow-LLSFR appears consistent with such an objective.

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