BRIEFING

Capital shortfalls disclosed by the ECB comprehensive assessment: How much progress has been made by banks that were requested to take action?

Interim report provided in advance of the Public Hearing with Danièle Nouy, Chair of the SSM in ECON on 31 March 2015

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On 26 October 2014, the ECB presented the results of its comprehensive assessment, stating that capital shortfalls were detected at 25 out of 130 participant banks, in total amounting to €25 billion. Each of the banks concerned had to explain to the ECB within two weeks after the public disclosure of the results how those shortfalls could be addressed within at maximum period of nine months. The ECON committee is interested to know how much progress has been made with mitigating actions since the public disclosure of the capital shortfalls. Given that the overall timeframe for addressing the capital shortfalls has not yet fully elapsed, one can so far only present interim results on the progress made. On the request of the ECON committee Professor Sascha Steffen reviews the progress made and will present the final results by October 2015. Below some ***interim results*** *provided are presented:*

INTERIM REPORT OF 23 MARCH 2015 BY SASCHA STEFFEN

Summary

The European Central Bank (ECB) published the results of the comprehensive assessment on 26 October 2014. After considering capital banks have raised until 30 September 2014, a capital shortfall of €9.5 billion across 13 European banks remained. The capital shortfall needs to be addressed and banks that have failed the assessment were required to submit capital plans and take actions to cover their respective shortfall.

The main objective of this briefing is to evaluate whether the remedial actions taken or announced by the banks can actually be considered appropriate and sounds, and to analyse whether these actions have resulted in any notable reactions on the financial markets.

Our preliminary results suggest that actions that have so far been taken by banks that have failed the stress test in 2014 might not have been successful. Share prices and market-to-book (MTB) ratios have further declined and these banks exhibit higher systemic risk relative to before the results have been disclosed and relative to banks that have passed the stress tests.

Overall, there is insufficient information about actions taken by the banks after the comprehensive assessment that has been publicly disclosed and that can be used to assess these actions. The existence and extent of other confounding events (such as elections in Greece, quantitative easing by the ECB) makes it difficult to isolate the effect of actions taken by individual banks following the comprehensive assessment without more precise information as to timing and type of these actions. The ECON Committee should therefore request more detailed information from the ECB.

Motivation

The European Central Bank (ECB) took over the regulatory oversight of 128 banks in the Eurozone in November 2014. The ECB now effectively assumes roles as both central bank and regulator in charge of the Single Supervisory Mechanism (SSM). In preparation, the ECB conducted a comprehensive assessment of these banks, which included an asset quality review (AQR) and a stress test. The results of this assessment have been published on 26 October 2014.[1]

The comprehensive assessment discovered a shortfall of €24.6 billion across 25 banks (€11.2 billion associated with the stress test and €13.4 billion associated with AQR adjustments). After considering €57.1 billion capital that has been raised by all participating banks between 31 December 2013 and 30 September 2014, a shortfall of € 9.5 billion across 13 banks remained. All 25 banks were supposed to submit a capital plan to the ECB within 2 weeks after publication of the results. Capital shortfalls from the AQR (stress test) have to be addressed within 6 months (9 months) after the disclosure of the results (ECB, 2014).

The main objective of this briefing is to evaluate whether the remedial actions taken or announced by the banks can actually be considered appropriate and sounds, and to analyse whether these actions have resulted in any notable reactions on the financial markets.

Data

To analyze capital market response to actions by the banks after the comprehensive assessment, we collect information on all publicly listed banks that participated in the assessment from SNL Financial and Bloomberg. We focus on the following metrics:

1. **Market-to-book ratio (MTB)**: The MTB ratio is calculated as market equity over book equity. Market equity is calculated using daily closing share prices and the number of common shares outstanding in the previous quarter. Book equity is as reported by the banks in the previous quarter.
2. **Capital shortfall in a systemic crisis (SRISK)**: We assume a systemic financial crisis with a global stock market decline of 40%. SRISK is our measure for a bank's capital shortfall in this scenario, assuming a 5.5% prudential capital ratio with losses estimated using the V-Lab methodology to estimate the downside risk of bank stock returns.[2] While this scenario and the resulting SRISK measure use market data and market equity (instead of book equity) in determining leverage, the approach is conceptually similar to that of the European stress tests, which is to estimate losses in a stress scenario and determine the capital shortfall between a prudential capital requirement and the remaining equity after losses.[3]
3. **Capital shortfall in a systemic crisis (SRISKcrml)**: SRISKcrml is comparable to SRISK but is specifically calculated for European banks with 2 main differences: SRISKcrml uses a different methodology to calculate bank equity losses during a crisis and corrects for the specific capital structure of Cooperative banks, where other entities (subsidiaries, regional banks) than the publicly traded company hold part of the equity of the group.[4]
4. **Share prices**: Share prices are daily closing prices adjusted for dividend payments.

[1] Steffen (2014) provides an in-depth discussion about the validity of the comprehensive assessment. Acharya and Steffen (2014 a,b) document that a crucial weakness of the ECB stress test was the continued reliance on risk weights when calculating the capital shortfalls.

[2] This capital shortfall measure has been implemented based on Acharya at al. (2012) and Brownlees and Engle (2013). The data are provided by New York University's V-Lab (http://vlab.stern.nyu.edu/welcome/risk/). The theoretical motivation for the measure can be found in Acharya et al. (2010). SRISK has been documented to be a comprehensive measure that includes losses due to both a bank's investments in assets and its exposure to fragile liabilities, which in the current European context relate, respectively, to holdings of peripheral sovereign bonds and (short-term) funding risk, such as U.S. money market fund withdrawals and other wholesale investors.

[3] We have used this metric in other studies related to the European stress tests (Acharya and Steffen, 2014a,b; Steffen 2011, 2014).

[4] SRISKcrml is calculated and reported by the Center of Risk Management at HEC Lausanne (http://www.crml.ch/index.php?id=4) and described in Engle et al. (2012).

Analysis

We identify 41 publicly listed banks that participated in the comprehensive assessment in 2014. Based on whether the bank experienced a capital shortfall in the adverse scenario in 2016 in the stress test, we distinguish between 3 groups of banks:

1. **Banks that passed the stress test ("Passed"):** 27 publicly listed banks did not experience a capital shortfall in the 2016 adverse scenario.
2. **Banks that almost failed the stress test ("Close")**: 4 banks experienced a capital shortfall in the 2016 adverse scenario but raised sufficient additional CET1 capital in 2014, which compensated for any shortfall under the adverse scenario.
3. **Banks that failed the stress test ("Failed")**: 10 banks experienced a capital shortfall in the 2016 adverse scenario even after accounting for additional CET1 capital raised in 2014.

Appendix Table 1 provides an overview of these banks sorted by country.

In a first set of tests, we ask how do our capital market metrics change for the 3 different groups of banks between October 2014 (before the results of the comprehensive assessment have been disclosed) and end of February 2015. We calculate the difference in MTB, SRISK, SRISKcrml and share prices between both dates and compute an average within each group. We present summary statistics in Table 1.

Preliminary results

- MTB ratios increased for the banks that passed the stress tests but declined further for the other 2 groups of banks. MTB declined most (-33.21%) for banks that have failed the stress test.
- SRISK has increased for all groups of banks. However, it increased more for banks that failed (77.10%) and banks that almost failed (135.33%).
- SRISKcrml even decreased for banks that passed the stress test (-2.58%) but increased also for the other 2 groups.
- Consistent with MTB, share prices of banks that failed the stress test declined substantially more (-41.65%) compared to banks that passed (-7.37%) or almost failed (-9.99%) the stress test.

Table 1. Descriptive Analysis

This table reports summary statistics for MTB, SRISK, SRISKcrml, and share prices for European banks that (1) passed the comprehensive assessment, (2) were close to failing, or (3) failed the comprehensive assessment. A bank has failed if it experiences a capital shortfall in the 2016 adverse scenario.

			Changes from 10/2014 to 02/2015						
2014 EU-wide stess test	**Number of Banks**	**Measure**	**Mean**	**Median**	**Min**	**P25**	**P75**	**Max**	**SD**
Passed	27	MTB	1.43%	2.29%	-41.73%	-7.80%	8.65%	28.05%	16.52%
Close	4	MTB	-8.37%	-8.37%	-59.71%	-59.71%	42.97%	42.97%	72.60%
Failed	10	MTB	-33.21%	-33.33%	-85.63%	-55.37%	-8.54%	3.36%	31.11%
Passed	27	SRISK	42.44%	16.95%	-30.84%	-4.96%	58.52%	423.11%	92.04%
Close	4	SRISK	135.33%	11.99%	2.23%	2.80%	267.85%	515.09%	253.32%
Failed	10	SRISK	77.10%	3.76%	-23.84%	-6.27%	140.89%	327.14%	122.87%
Passed	27	SRISKcrml	-2.58%	-0.89%	-99.47%	-21.16%	10.77%	166.41%	51.37%
Close	4	SRISKcrml	550.65%	-16.51%	-30.76%	-23.75%	1125.05%	2266.39%	1143.85%
Failed	10	SRISKcrml	87.82%	16.36%	-87.58%	6.32%	201.43%	373.90%	148.82%
Passed	27	Share price	-7.37%	-5.03%	-46.20%	-12.85%	2.50%	13.00%	15.03%
Close	4	Share price	-9.99%	3.61%	-54.47%	-26.08%	6.11%	7.31%	29.72%
Failed	10	Share price	-41.65%	-46.90%	-95.80%	-53.95%	-31.79%	17.48%	30.53%

Next steps

The next steps in our analysis include the following:

- Include credit default swap (CDS) spreads as additional metric in the analysis. While the reaction of stock returns to capital measures is ex-ante ambiguous (at least from a theoretical perspective), CDS spreads might provide better predictions as to how specific actions taken by banks were perceived by capital market.
- Collect announcements and announcement dates of specific actions taken by banks.
- Investigate abnormal returns of stock and CDS prices around these announcement dates. Many confounding events since October 2015 (such as elections of a new parliament in Greece, the announcement of quantitative easing by the ECB) make it difficult to isolate a causal effect of capital measures by banks on market prices.

However, to perform such an analysis, we need information about timing and type of the announcement. Does the bank plan a capital increase issuing new shares in secondary markets? Does it plan to sell assets? Do we observe an increase in M&A activity in the Eurozone? These are important questions that might be evaluated differently by capital markets.

References

- Acharya, V. V., R., Engle, and M. Richardson (2012). Capital Shortfall: A New Approach to Ranking and Regulating Systemic Risks. Am. Econ. Rev. 102, 59–64. doi:10.1257/aer.102.3.59

- Acharya, V. and S. Steffen (2014a). Falling Short of Expectations? Stress-Testing the European Banking System. *Center of European Policy Studies* Working Paper Series.

- Acharya, V. and S. Steffen (2014b). Benchmarking the European Central Bank's Asset Quality Review and Stress Test – A Tale of Two Leverage Ratios. *Center of European Policy Studies* Working Paper Series.

- Brownlees, C.T., R. Engle (2011). Volatility, Correlation and Tails for Systemic Risk Measurement. SSRN Electron. J. doi:10.2139/ssrn.1611229

- Engle, R.F., E. Jondeau, and M. Rockinger (2012), Conditional Beta and Systemic Risk in Europe. HEC Lausanne working paper.

- European Central Bank (ECB 2014). Aggregate Report on the Comprehensive Assessment. URL: https://www.bankingsupervision.europa.eu/ecb/pub/pdf/aggregatereportonthecomprehensiveassessment201410.en.pdf

- Steffen, S. (2011). Measuring systemic risk of the European banking sector. VoxEu.

- Steffen, S. (2014). Robustness, validity and significance of the ECB's asset quality review and stress test exercise. http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2014)528761

Appendix

A-Table 1. Public banks that participated in the comprehensive assessment

This table reports all publicly listed banks that participated in the comprehensive assessment in 2014 sorted by country. The third column "2014 CA Results" indicates whether the bank passed the assessment, was "close" to failing (i.e. that would have failed if measures taken in 2014 had not been taken into account) and whether the bank has failed. A bank has failed if it experiences a capital shortfall in the 2016 adverse scenario.

Bank	Country	2014 CA Results
Erste Group Bank	Austria	Passed
Österreichische Volksbanken	Austria	Failed
Dexia	Belgium	Failed
KBC Group	Belgium	Passed
Hellenic Bank	Cyprus	Failed
BNP Paribas	France	Passed
Crédit Agricole SA	France	Passed
Société Générale	France	Passed
Aareal Bank	Germany	Passed
Commerzbank	Germany	Passed
Deutsche Bank	Germany	Passed
Alpha Bank	Greece	Passed
Eurobank Ergasias	Greece	Failed
National Bank of Greece	Greece	Failed
Piraeus Bank	Greece	Close
Allied Irish Banks	Ireland	Passed
Bank of Ireland	Ireland	Passed
Permanent TSB Group Hldgs Plc	Ireland	Failed
Banca Carige	Italy	Failed
Banca Monte dei Paschi	Italy	Failed
Banca Popolare di Milano	Italy	Failed
Banca Popolare di Sondrio	Italy	Close
Banca popolare dell'Emilia	Italy	Close
Banco Popolare	Italy	Close
Credito Emiliano	Italy	Passed
Intesa Sanpaolo	Italy	Passed
Mediobanca	Italy	Passed
UBI Banca	Italy	Passed
UniCredit	Italy	Passed
Bank of Valletta	Malta	Passed
HSBC Bank Malta	Malta	Passed
Banco BPI	Portugal	Passed
Banco Espírito Santo	Portugal	Passed
Millennium BCP	Portugal	Failed
VUB banka	Slovakia	Passed
BBVA	Spain	Passed
BFA Sociedad Tenedora Acciones	Spain	Passed
Banco Popular Español	Spain	Passed
Banco Santander	Spain	Passed
Banco de Sabadell	Spain	Passed
Bankinter	Spain	Passed