

# ICAAP Implementation in Austria's Major Banks

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*While Pillar 1 of the regulatory capital framework Basel II stipulates capital requirements for credit, market and operational risk, Pillar 2 focuses on the economic and internal perspective of banks' capital adequacy.*

*To ensure capital adequacy, banks are required to have an Internal Capital Adequacy Assessment Process (ICAAP) in place that enables them to identify, measure and aggregate all material risk types and calculate the economic, or internal, capital necessary to cover these risks. In addition to this, banks should actively manage their overall risk profile.*

*The ICAAP is essential to the preservation of financial stability and will be subject to a higher degree of supervisory scrutiny in the near future. Under the principle of proportionality, requirements for the ICAAP are in line with banks' specific characteristics and business models. As a result, a variety of approaches is in use.*

*This paper provides a summary of the information Austria's eight largest banks (in terms of systemic importance) have to date published on this subject (e.g. annual reports and specific documents in line with disclosure requirements).*

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## 1 Introduction

The three-pillar Basel II Framework on capital requirements and capital adequacy requires banks to measure credit, market and operational risk in accordance with regulatory provisions and to back these risks with capital (Pillar 1). Under Pillar 2, banks are additionally required to back all material risk types with internal (economic) capital in order to ensure capital adequacy (Internal Capital Adequacy Assessment Process – ICAAP). Pillar 3 strengthens market discipline via public disclosure requirements.

Hence, the ICAAP is also an essential element of preserving financial stability and will, in the near future, be subject to a higher degree of supervisory scrutiny. The ICAAP requires banks to implement processes to identify all risks that may affect them, measure and aggregate these risks and back them with adequate internal capital. In another step, banks are required to in-

tegrate overall risk management into their business operations.

The recent turbulence in the international money and capital markets has particularly underscored the need for comprehensive risk management systems.

In accordance with the principle of proportionality, banks have been given much leeway in implementing the ICAAP so as to allow every bank to use the processes that best suit its specific situation and business model. Different requirements naturally entail a variety of approaches.

In order to create transparency for all stakeholders, banks are obliged to publish specific information to meet disclosure requirements.

This paper attempts to provide selected qualitative information about the procedures Austria's eight largest, i.e. systemically most important, banks use to assess capital adequacy (pursuant to Article 39a of the Austrian Banking

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Act). The information stems solely from publications (e.g. 2007 annual reports and specific documents in line with disclosure requirements).

Section 1 continues with a brief explanation of the ICAAP. The introduction also describes which credit institutions are regarded as the eight systemically most important banks, as the banks under review were chosen based on this criterion.

Section 2, the main part of this paper, deals with the implementation of the ICAAP in the banks under review. In short, based on an analysis of the banks' publications, the paper sheds light on how the banks, broadly speaking, assess capital adequacy. The following questions will be answered, provided that they are addressed in the published documents:

- Which risk types have been defined?
- Which risk types have been quantified by the banks under review?
- Which risk quantification methods are used?
- Which risk aggregation methods are used?
- How do the banks define economic capital?
- What is the composition of the risk coverage potential?
- What are the characteristics of the risk-bearing capacity analyses?
- How is bank-wide (risk) management performed (use of risk-adjusted performance measures, capital allocation methods)?

Since annual reports (risk reports) include only selected information, this study, which relies exclusively on publicly disclosed information, does not provide a comprehensive picture of the

capital adequacy procedures used by the banks under review.

Besides, risk reports often take a broadbrush approach to the calculation of regulatory and economic capital, which makes it difficult to distinguish between the two approaches. This is partly due to the fact that the methods for determining regulatory capital requirements are (temporarily) also used to calculate the economic capital.

This study concludes with information about the status of the ICAAP implementation process and about future challenges to banks' management of their overall risk profile.

### 1.1 Legal Basis

The Basel II Framework prepared by the Basel Committee on Banking Supervision ("International Convergence of Capital Measurement and Capital Standards") serves as the basis for the ICAAP. The EU Directives 2006/48/EC (Capital Requirements Directive – CRD)<sup>2</sup> and 2006/49/EC (Capital Adequacy Directive – CAD) made these capital standards legally binding. The provisions relevant to ICAAP implementation in Austria were transposed into national law by incorporating them mostly into Article 39 (due diligence obligations) and Article 39a (internal capital adequacy assessment process) of the Austrian Banking Act.

To provide further guidance for credit institutions, CEBS (2006) published ten principles for the implementation of a consistent and comprehensive ICAAP. Banks should fully specify and document the ICAAP, integrate it into ongoing management processes ("use test") and regularly review its

<sup>2</sup> The following articles of the CRD are especially relevant for Pillar 2: Article 22 and Annex V (administration and banks' control procedures), Article 123 (Internal Capital Adequacy Assessment Process ICAAP), Article 124 and Annex XI (supervisory review and evaluation procedures) as well as Article 136 (regulatory measures).

adequacy. The ICAAP should also be risk-based, comprehensive and forward-looking. It should furthermore produce a reasonable outcome and be based on adequate risk measurement and assessment methods. Institutions take full responsibility for their ICAAP, which they may tailor to their specific circumstances and needs in line with the principle of proportionality.

## 1.2 Selection of Banks under Review

The eight banks analyzed in this study were selected in accordance with their systemic importance. Following the principle of proportionality, the ICAAP is a more demanding process for large banks, which is why they can be expected to conduct a more comprehensive risk analysis than small credit institutions.

Box 1

### The Eight Systemically Most Important Austrian Banks<sup>1</sup>

The table below shows a ranking of the ten largest Austrian banks by total assets as per their 2007 financial statements. In terms of systemic relevance, Kommunalkredit Austria AG (as part of the consolidated 2007 financial statements of Österreichische Volksbanken AG) and Oesterreichische Kontrollbank AG are not counted among the eight largest banks.

Table 1

#### Ten largest Austrian banks by total assets as per their 2007 financial statements

	Total Assets
	EUR million
Bank Austria Creditanstalt AG	209.170
Erste Bank der oesterreichischen Sparkassen AG	200.519
Raiffeisen Zentralbank Österreich Aktiengesellschaft	137.402
Österreichische Volksbanken-Aktiengesellschaft	78.641
BAWAG P.S.K. Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Aktiengesellschaft	44.847
Hypo Alpe-Adria-Bank International AG	37.939
(Oesterreichische Kontrollbank AG	33.019)
(Kommunalkredit Austria AG	24.919)
Raiffeisenlandesbank Oberösterreich Aktiengesellschaft	25.267
Raiffeisenlandesbank Niederösterreich-Wien AG	19.554

Source: OeNB.

<sup>1</sup> A ranking of the top 9 to 39 banks also exists.

## 2 ICAAP Implementation by Austria's Major Banks

### 2.1 Definition of Risk Types

Identifying risk types is the first step in assessing the relevance of risks and the need for their systematic recording. Under Pillar 1, three risk types – market risk, credit risk and operational risk – need to be captured. These risks must therefore be defined.

Pillar 2 requires that additional risk types be taken into consideration. Article 39 para 2b of the Austrian Banking Act itemizes ten risk types the ICAAP should address in particular.

The definitions of the risks under review differ because the number of defined risk types can vary from bank to bank and risks may be defined in a broad or narrow sense.

Generally speaking, it is evident that processes banks had put in place in recent years to comply with Pillar 1 have impacted on the implementation of Pillar 2 requirements. As a case in point, operational risk has, in most cases, been defined consistently in line with the Austrian Banking Act. Consistent definitions also apply to market risk arising from the trading book and the banking book. However, market risks in the banking book (interest rate risk in the banking book) are additionally treated separately in banks' annual reports. Equity price risk, foreign exchange risk and interest rate risk are by definition consistently subsumed in the market risk category.

Banks providing information about credit risk in their annual reports use differing definitions of the respective subtypes. Borrower default risk, as opposed to counterparty risk, is consistently defined as credit risk. Credit migration risk (rating downgrade risk) is not consistently classified as a credit risk in banks' ICAAP. In five of the eight cases, country risk is explicitly considered an inherent part of credit risk.

The turbulence in international money and capital markets starting in mid-2007 is characterized by contracted liquidity in global credit markets and banking systems and has put the spotlight on liquidity risk. Three banks categorize liquidity risk by maturity, i.e. short-, medium- and long-term, buckets. Five banks subdivide this risk category into a narrow definition of liquidity risk (insolvency risk) and refinancing risk (structural risk). Especially in the case of liquidity risks, clear-cut distinctions are difficult to

make (e.g. between structural and long-term liquidity risk).

Equity investment risk (participations) has been defined as a separate risk type by six of the eight banks. Three banks each mention business and real estate risks. The banks under review have a different understanding of the "other risks" category. Other risks may include strategic risk, reputation risk, equity risk, business risk and earnings risk.

## 2.2 Risk Type Quantification

In order to measure risk, it needs to be categorized as a certain risk type first. However, not all identified risk types are relevant for a given credit institution. Under Pillar 2, all material risk types need to be quantified and backed with an adequate amount of economic capital. Some risk types are difficult to measure precisely, e.g. other risks (reputation risk, strategic risk). For such risks, banks should have a process in place for qualitatively estimating the respective capital charges. Under certain circumstances, it might not make sense to allocate economic capital to a particular risk type, e.g. in the case of liquidity risk when the composition of the portfolio's maturity structure is at issue.

The value at risk (VaR) method has become the market standard or best practice for measuring risk in the banking industry. One of the eight banks under review additionally uses the expected shortfall<sup>4</sup> (with the same one-sided confidence level as for the VaR) as a stress testing indicator.

The banks use the VaR method for measuring credit risk. Compliance with the regulatory capital require-

<sup>4</sup> The expected shortfall, also called conditional VaR, is the expected value of loss exceeding (and including) the value of loss for the respective one-sided confidence level.

ments may thus serve as a basis for internal calculations. The holding period selected for the VaR method is one year, and the one-sided confidence levels are usually set at 95%, 99%, 99.9% or, in most cases, at 99.95%, according to the banks' 2007 annual reports. Three banks explicitly mention using a third-party portfolio program (a modification of CreditRisk+<sup>5</sup> and CreditManager,<sup>6</sup> an enhanced version of CreditMetricsTM) for default risks. Portfolio models may rely on (modified) results from internal ratings. One credit institution stated that it was planning to switch to the advanced IRB (AIRB) approach for supervisory purposes in 2008, applying it also to its non-retail portfolio, which needs to be treated with the AIRB under the IRB anyhow. Four banks indicated that they were either using or intending to use the foundation IRB (FIRB) approach for their non-retail portfolio.

According to the 2007 annual reports, counterparty credit risk is addressed under credit risk in five cases, while two credit institutions quantify counterparty credit risk separately. Regarding country risk, all banks under review indicate that they assess this risk under credit risk or that they use a dedicated country rating model.

To measure market risk,<sup>7</sup> all banks rely on VaR methods. Here, they also draw on results from their internal models used for regulatory purposes. In their respective annual reports, four of the eight banks explicitly state that they use an internal market risk model

for supervisory purposes. Different parameters are used for the VaR calculation of market risk. While the holding periods of one or ten days are based on supervisory requirements, assumed holding periods of one month and one year are also in use. One-year holding periods are used to achieve a consistent scaling for the risk-bearing capacity analysis. All the banks that provide information on this subject in their annual reports set the one-sided confidence levels at 99%; sometimes parallel calculations are based on higher levels, such as 99.95%. According to the annual reports, one credit institution employs a proprietary model for market risk quantification, and at least three other banks use the KVaR+<sup>8</sup> model. Both (Monte Carlo and historical) simulations and variance covariance approaches are used.

VaR methods are also being increasingly adopted for measuring operational risk, and banks are stepping up the capture of loss data. To meet Pillar 1 requirements, one bank uses the Advanced Measurement Approach (AMA), and two banks indicate that they use the Standardized Approach in 2008. Four banks indicate that they use the Basic Indicator Approach in 2008. In the annual reports, there is no mention of major differences between banks' internal models and regulatory models.

Regarding the treatment of liquidity risks, using a liquidity/funding matrix, i.e. a breakdown of residual maturity, has become the market standard (liquidity gap analysis). Unknown maturities are modeled accordingly in the

<sup>5</sup> For a description of this model, see *Credit Suisse First Boston International (1997)*.

<sup>6</sup> See *J.P. Morgan (1997)* for a description of the *CreditMetricsTM* model; for a brief description of *CreditManager*, see *RiskMetrics Group (2008)*.

<sup>7</sup> No distinction is made between risks in the trading book and in the banking book.

<sup>8</sup> For a brief description of this model, see *Reuters (2007)*.

funding matrix to identify liquidity gaps. Banks usually distinguish between short-term and medium-term or long-term maturities or between structural and nonstructural liquidity (liquidity risk in the narrower sense). Periods of 1 week, 1 month, but sometimes also 2 weeks or 60 days are considered short-term maturities. Medium- and long-term maturities are usually defined as periods ranging from 3 months to more than 15 years. However, most reference maturities range between 1 and 5 years. Liquidity/funding matrices (on a solo and consolidated basis) may be drawn up for different currencies, liability types or for a normal situation/crisis situation scenario. Consideration has to be given to the corporate structure of banking groups with regard to intercompany liquidity transfers.

As mentioned above, all eight banks under review classify interest rate risk in the banking book as a market risk. Applying the value at risk method to this risk type has hence become standard practice. All eight banks use a one-sided confidence level of 99% and a holding period of 1 day, 10 days or 1 month. Gap analysis is also used consistently, namely for more than five currencies and for a minimum of four maturity bands. Furthermore, the analysis of stress scenarios (twists and shifts of the yield curve) is an integral part of interest rate risk analysis. One credit institution explicitly mentions special indicator analyses.

In their treatment of concentration risks, the banks often identify concentrations by breaking down the exposure by industries. If concentrations become evident, stress tests are used to identify increased sensitivity to certain

factors. Risk concentrations are also identified with the credit risk model, provided that it comprises concentration risks.

Two banks each use the VaR to model business risk and equity investment risk (one-year holding period, one-sided confidence level of 99.95%). One bank classifies business risk under other risks (but plans to use the VaR for quantification) and backs it with a capital buffer. Unless the VaR method is used, equity investment risk is addressed e.g. in connection with credit risk, via expert ratings, strategic analyses or debt ratings. For these two risk types no consistently used standard has manifested itself to date.

Real estate risks are explicitly addressed in three of the annual reports under review. In one case, this risk is quantified with the VaR method, and in the two other cases, it is incorporated into credit risk or other market risks.

Three credit institutions treat other risks as a separate category, taking them into account in their risk-bearing capacity analyses. Since these risks are difficult or impossible to quantify, banks use qualitative estimations instead.

### 2.3 Risk Scaling and Aggregation

A consistent risk measure for all risk types is a prerequisite for meaningful risk aggregation. As mentioned above, the VaR is a commonly used risk measure, even though it is, unlike other risk measures (e.g. the expected shortfall), not subadditive and therefore not a coherent risk measure.<sup>9</sup> In order to reach consistent scaling for the VaR parameters, it is necessary to provide a consistent basis for both the time hori-

<sup>9</sup> According to Artzner et al. (1998), a coherent risk measure is a risk measure that satisfies the properties of monotonicity, positive homogeneity, subadditivity and translational invariance.

zation and the one-sided confidence level. The annual reports provide no detailed information about the scaling procedures. Generally speaking, scaling to a one-sided confidence level can be performed under the assumption of a normal distribution by multiplication with the respective scale factor (the credit risk model may be calibrated to the desired level, as the assumption of a normal distribution is not adequate for credit risks). When scaling holding periods, special attention needs to be paid to market risks, because scaling holding periods<sup>10</sup> from a ten-day to a one-year horizon implicitly suggests that the positions to be held in one year's time correspond to those currently held; this assumption is usually not supported by the actual holding period of positions in the trading book. For the analysis of the risk-bearing capacity, it is hence possible to consider if-then scenarios (stop-loss limits) to calculate the VaR with a one-year holding period in a more realistic, yet less conservative fashion.

Determining the overall risk position must be based on a process defining the way in which the individual risk types are aggregated (intra-risk and inter-risk aggregation). For inter-risk treatment, no assumptions about correlations are needed when simulation models are in use (since they are explicitly accounted for). By contrast, correlation assumptions need to be made for the intra-risk aggregation of several separately measured risk types. Risk types may be added or combined with the help of a correlation matrix. Copula approaches may also be used. When adding risks, a perfectly positive

correlation is implied because it is assumed that all VaR values are computed simultaneously. Therefore, some credit institutions use aggregation methods that account for diversification effects. According to the banks' annual reports, at least one credit institution considers diversification effects when aggregating different risk types. Another bank states that the risk type results are added up. Three other credit institutions account for diversification effects at least within certain risk types (market and credit risk). The easiest way to aggregate risks under the assumption of diversification effects is to use variance covariance matrices. Advanced methods, such as copula approaches, allow for instance for the aggregation of distributions with tail dependences. However, the 2007 annual reports do not explicitly provide in-depth information about the consideration of diversification effects. Thus, it remains unclear whether correlations are assumed or whether copula approaches are used.

## 2.4 Definition of Economic Capital

Economic capital is defined as the capital needed to cover possible losses. However, different measurement methods and parameters can be used for measuring risks. In Austria's major banks under review, the VaR method is commonly used to measure economic capital. While the assumed holding periods for the VaR are consistently scaled to a period of one year, there are different approaches to determining the one-sided confidence level. At least two banks determine the one-sided confidence level by considering their desired<sup>11</sup> rating. In this case, the liqui-

<sup>10</sup> A normal distribution may be assumed for market risks. Time is scaled by way of multiplication with the square root of the time horizon. Hence, to get from a 10-day holding period to a 250-day holding period, a multiplication with 5 (the square root of 25) is required.

<sup>11</sup> If the desired rating is associated with a maximum probability of default of 0.05%, it follows that the one-sided confidence level is 1% minus 0.05%, i.e. 99.95%.

liquidation perspective is of importance (i.e. the worst-case scenario; as opposed to the going-concern perspective, which is only used for hedging purposes in negative cases). The minimum value chosen by the banks for the one-sided confidence level is 99%, while the maximum value indicated in the 2007 annual reports is a one-sided confidence level of 99.95%.

At the same time, some banks also calculate the risk capital for the going-concern perspective, for which a lower one-sided confidence level is used.

Only one of the 2007 annual reports provides information about the breakdown of economic capital by specific risk types (in one case, such values are mentioned in previous annual reports). It becomes evident that credit risk accounts for more than 70% of the economic capital.

## 2.5 Risk Coverage Capital

To determine the risk coverage capital, several factors need to be taken into account. The more subsidiaries are included in the ICAAP and the higher the number of countries where these businesses are located, the more attention needs to be paid to the unambiguous definition of risk coverage capital, because the underlying capital components should be consistent, even though different accounting standards may be used.

Risk coverage capital may be defined differently depending on the nature of the risk-bearing capacity analysis. If more than one comparison is made in the analysis of the risk-bearing capacity (for different one-sided confidence levels), it follows that more than one definition of risk coverage capital is required. In practice, banks either use a level concept for defining risk coverage capital and, depending on the representation, increase the number of

levels in the calculation (two credit institutions define levels) or define different positions as risk coverage capital for the going-concern and for the liquidation perspective. In the annual reports under review, the defined constituents of risk coverage capital include, among others, the operating result, reserves, undisclosed reserves, equity and subordinated capital.

## 2.6 Risk-Bearing Capacity Analysis

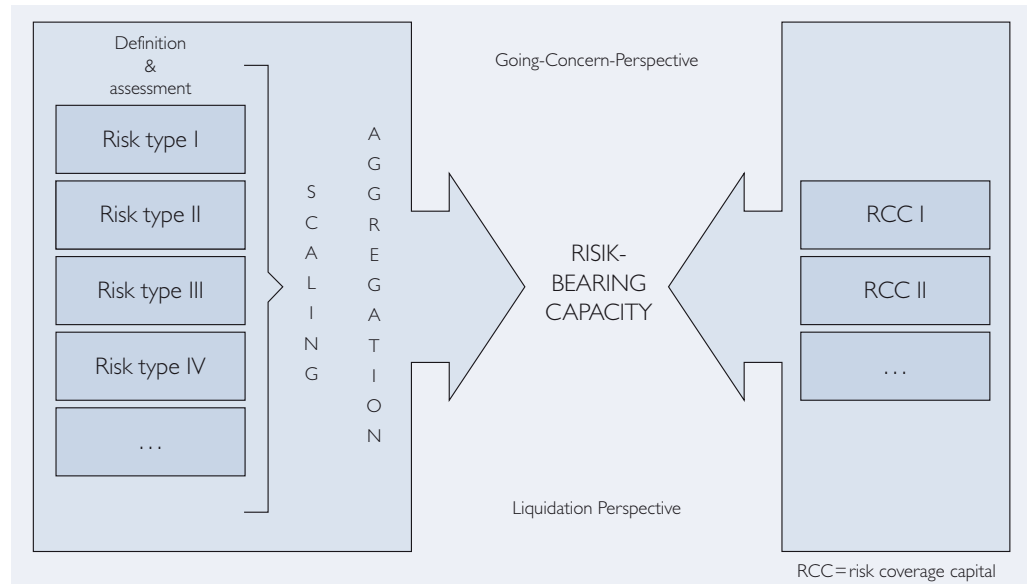
Risk-bearing capacity analyses are meant to provide information about a credit institution's ability to cushion risks with internal capital if and when such risks materialize. For these analyses, all risks relevant for the bank in question are aggregated into an overall risk position that is then compared with the risk coverage capital.

The risks taken into account for risk-bearing capacity analyses vary depending on the credit institution. The prerequisite for including a risk type is its quantification (even in the form of a risk buffer for other risks). However, not all quantified risks need to be represented in the risk-bearing capacity analysis. This allows banks to manage e.g. (relevant) liquidity risks outside the framework of the risk-bearing capacity analysis.

In most cases, the overall risk position is calculated as a VaR measure. It is common practice to perform more than one comparison of the overall bank risk with the risk coverage capital, e.g. under the going-concern perspective with a one-sided confidence level of 95% and under the liquidation perspective with a one-sided confidence level of 99.95%. In few cases, expert estimates are used for the risk types included in the risk-bearing capacity analysis and capital buffers are created for other risks. Three of the eight banks include liquidity risk as a



## Risk-Bearing Capacity Analysis



Source: OeNB.

separate position in their risk-bearing capacity analyses. The other five banks manage liquidity risk outside the framework of the risk-bearing capacity analysis.

According to the banks' 2007 annual reports, all of them factor mostly the three Pillar 1 risk types, i.e. market and credit risk as well as operational risk, into their risk-bearing capacity analyses. Equity investment risks are accounted for as separate positions by four of the banks, and two banks each consider business and real estate risks. Six banks mention other risk types in the risk-bearing capacity analysis (e.g. performance risk of the repayment vehicle, liquidity risk and refinancing risk).

It is evident from six of the eight annual reports that specific risk types, such as liquidity risk, interest rate risk and counterparty risk, are quantified and managed, but not included in the risk-bearing capacity analysis.

Different scenarios are used for assessing the overall bank risk, and the amounts of risk coverage capital used

vary accordingly or different positions are employed for these scenarios (see above). As to the frequency of risk-bearing capacity analyses, half of the banks under review indicate that they perform them quarterly.

### 2.7 Risk-Adjusted Performance Measures

Considering just the performance of a bank does not provide sufficient input for integrated bank-wide capital allocation and risk management. In the same vein, risk measures must be put into context. Risk-adjusted performance measures account for both performance and risks.

Three of the eight banks disclose information about the risk-adjusted performance measure they use. While one bank uses the Economic Value Added (EVA), two credit institutions calculate the Return on Economic Capital (ROEC, which equals the Return on Risk-Adjusted Capital, RORAC). Another credit institution uses the Risk-Adjusted Return on Risk-Adjusted Capital (RARORAC).

A detailed description of the above-mentioned risk measures can be found in Schierenbeck (2003, p. 507 ff).

Since regulatory and economic approaches may be driven by differing objectives, it is possible to run parallel measurement systems. One example is the parallel use of the ROE and the ROEC, which is very helpful for comparing non-risk-adjusted and risk-adjusted performance measures.

## 2.8 Bank-Wide Risk Management

Bank-wide risk management comprises many elements because it basically concerns any decision made based on the risk measurement. In addition to reporting, three-year planning and the periodical determination of the risk strategy, this also affects the allocation of economic capital. The involved business units are given latitude for actively seeking out risk, and in the allocation process, the risk limit is assigned in the form of economic capital. The limit systems, which are described in detail in the annual reports under review, cover a wide variety of limit types. These include, first and foremost, VaR limits, which are inherently position-independent.<sup>12</sup> Stop-loss limits are also commonly used by the credit institutions under review. The same applies to sensitivity limits, volume limits, position limits (for foreign currencies, interest rate and equity price risks), rating-dependent limits and limits for nonlinear positions. The limit system thus serves to control risk concentrations.

Other risk management tools are risk-adjusted pricing or active portfolio management; both are explicitly men-

tioned by three of the eight banks. Other operational measures used by the banks under review, e.g. for the purpose of limiting operational risk, are contract design, contingency planning, insurance and hedging.

## 2.9 Stress Testing

The eight banks under review mention a large variety of stress tests. Given the great heterogeneity of the stress tests used, this study refers only briefly to some specific stress tests. The main focus is on scenario analyses, which are based on (five- or six-year) historical worst-case values or hypothetical scenarios. One credit institution also computes the expected shortfall in addition to the VaR, using the same confidence interval. As stress tests allow for the identification of sensitivities to specific risk factors, they are a valuable input for bank-wide risk management.

## 3 Outlook

Austrian credit institutions have made significant progress in implementing Basel II, such as the mandatory approaches under Pillar 1. While market risk measurement procedures had already been introduced a while ago, banks have put much effort into enhancing their credit risk models in recent years, especially those banks that had requested the application of the IRB approach. Improvements are also constantly being made in the areas of operational risk quantification and loss data compilation.

Pillar 2 complements Pillar 1 by adding an economic perspective, and Austrian credit institutions have been refining their systems in this area as

<sup>12</sup> Unlike counterparty limits, VaR limits have the advantage of not providing any information about the type of product on which the VaR is based, thus maintaining the business unit's latitude. The downside of VaR limits is that an understanding of the relation of VaR values is a prerequisite and that the VaR for a given position first needs to be computed, while limits that, for example, determine the maximum outstanding nominal value, are easier to explain.

well. Since banks have to meet the (mandatory) regulatory capital and economic capital requirements at the same time, they may use two different procedures for assessing the respective capital charges. Coexisting approaches may entail different management incentives, and so does the goal of obtaining good external ratings.

The implementation of the ICAAP requires, just like the implementation of Pillar 1, a complex IT structure and a high-quality data pool. Besides, the results for the overall bank risk may be sensitive to the selected methodology (choice of the risk measure, of the confidence level, consideration of correlations).

Regarding the implementation status, banks have already made great progress in advancing risk type measurement for the risk-bearing capacity analysis. In a first step, banks drew and built on the risk quantification methods used under Pillar 1. Subsequently, they have been adding or are about to add the economic perspective.

While very few banks publish quantitative results, such as a breakdown of the economic capital by risk type or the utilization of the risk coverage capital as part of the risk-bearing capacity analysis, information about the concepts used for bank-wide risk management is already available in the annual reports. Another step yet to be taken is the application of bank-wide risk management to business operations. The challenge here is that the concept of economic capital needs to enjoy a high degree of acceptance within the company, so that bank-wide management can be geared toward economic parameters and subsequently integrated into business operations.

The third pillar of Basel II revolves around disclosure, including information about certain elements of capital

adequacy procedures. Quantitative and qualitative disclosure documents have already been published, which has subsequently resulted in a higher level of transparency. Publications containing more detailed information are expected in the near future.

Another challenge that Austrian banks face is related to their extensive business activities in CEECs. Integrating subsidiaries requires additional resources because recently acquired enterprises might already have systems in place. In such a case, the local ICAAP has to be integrated into the centrally developed process, or the parent bank decides to run parallel structures. Sound judgment and solid business acumen help promote such an integration process. Furthermore, numerous country-specific requirements and accounting regulations need to be taken into account. The more fully consolidated companies a banking group includes, the higher the amount of organizational effort required for the integration process, because a separate integration step is needed for every single risk type at each of the affiliated credit institutions.

Banking supervision authorities also meet with new challenges. In light of banks' extensive business activities in CEECs, supervisory authorities in different countries need to cooperate very closely because a common understanding must be reached to ultimately assess the implementation of the ICAAP.

To sum up this analysis, Austria's major banks have made important strides in developing their capital adequacy procedures in recent years, thus paving the way for implementing a process to assess the risk-bearing capacity. A comprehensive, fully integrated bank-wide risk management is still in different stages of implementation and remains a step to be taken.

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