

# 美中金融家

## Chinese American Finance



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## 新闻动态

### 资讯·最佳实践

#### 2003年12月本土最佳实践

##### 最佳IPO

##### 中国人寿创纪录两地上市

2003年12月17日、18日，中国人寿保险股份有限公司分别在美国纽约证券交易所和香港联合交易所两地上市，至此2003年全球最大的IPO项目尘埃落定，中国人寿保险股份有限公司也因此成为国内第一家在港、美两地同时上市的金融企业。

此次公开发行最终定价为：全球机构投资者每股3.625港元，香港公开发售每股3.59港元(扣除相关税收)，美国ADS(存托凭证)18.68美元。按照这一发行价格，公开发行超额配售融资规模为30亿美元，超额配售后融资规模为35亿美元。其中，长江实业主席李嘉诚通过其旗下的“长江实业”和“和记黄埔”、恒基地产主席李兆基通过“恒基兆业”分别认购2亿美元，新世界发展主席郑裕彤通过其旗下的“周大福”以1亿美元入股中国人寿，锁定期均为一年。

中国国际金融有限公司、花旗集团、瑞士信贷第一波士顿及德意志银行为此次发行的联席全球协调人、联席全球账簿管理人、联席保荐人及联席牵头经办人。中国国际金融有限公司及雷曼兄弟为中国人寿的财务顾问。

##### 最佳零售金融

##### 中德住房储蓄银行倡“现存后贷”模式

中国建设银行行长和德国施威比豪尔住房储蓄银行共同投资建立的中德住房储蓄银行，年内开业运营。这是中国第一家按照国际通行运作模式建立的住房储蓄银行。总部设在天津，中国建设银行持股75.1%。

与其他住房信贷产品不同的是，该行住房储蓄业务遵循“先存后贷，低存低贷，固定利率”的原则。首先，住房储蓄客户要在该行开户存款，达到规定条件后才有资格获得贷款。而且，该行住房贷款利率大幅度低

于现行个人住房贷款利率。该行即将推出的最优贷款年利率为3.3%，是国内各种个人住房贷款中利率最低的，甚至低于住房公积金贷款的利率。但是，该行的存款利率也低于现行定期存款利率。

另外，该行住房储蓄贷款实行固定利率，无论期限长短。住房储蓄合同一经签订，客户的存、贷款利率就固定下来，在已签署的合同执行期间，贷款利率不受市场利率波动和通货膨胀的影响。

把提供住房储蓄与住房贷款相结合，这是国内住房金融市场的一大创新。德国每13人中就有1人就签有“住房储蓄合同”。

##### 最佳银团贷款

##### 中国工商银行巨额投向高端市场

仅在2003年最后一个月之内，工行分别完成了两笔巨额的银团贷款，实践了其以银团贷款方式发展批发金融，抢夺高端市场的战略。

2003年12月14日，以工行为牵头行的上海中资银行组成的银团与上海广电NEC液晶显示器有限公司签订贷款协议，为某项目提供总额为六百四十六亿日元的银团贷款。该银团成功地筹组了包含人民币、美元、日元三个币种，长期与短期贷款方式相结合，境内外投资方担保和设备、土地与厂房设备抵押的贷款担保方式相结合。银团同时还将为上海广电NEC液晶显示器有限公司提供存贷款、国际业务、担保代理、资金监管等一揽子金融配套业务，构架十分复杂。

而仅在两天前，工行、广发和浦东发展银行组成的银团刚刚完成与华晨宝马汽车有限公司融资合同的签署。整个融资项目规模为13亿人民币定期贷款；10亿人民币循环贷款；8500万欧元进口保证。工行占50%的份额。

在最近英国《新兴市场》的排名中，中国工商银行在新兴市场上的银团贷款业务列为第7名，是国内银行迄今在该杂志所获得最高排名；

##### 最佳持股

##### 三境外巨头“最高比例”参股兴业银行

2003年12月12日，香港恒生银行、国际金融公司(IFC)和新加坡政府直接投资有限

公司(GIC)三家境外战略投资者,以共计24.98%的股权参股兴业银行,是目前为止国内商业银行一次引进外资股东家数最多、入股比例最高、涉及金额最大的一宗交易协议。

根据协议,三家境外战略投资者此次共认购兴业银行发行的9.99亿股新股,其中恒生银行、国际金融公司、新加坡政府直接投资有限公司分别认购6.3909亿、1.5996亿、1.9995亿股,分别占增发后兴业银行总股本的15.98%、4%和5%。本次入股协议涉及的投资总额为人民币26.973亿元,每股认购价格为人民币2.7元,是按照国际会计准则编制并审计的兴业银行2002年12月31日的每股净资产值的1.8倍。入股完成后兴业银行将与境外战略投资者在风险管理、财务管理、零售业务等领域展开合作,境外战略投资者将为兴业银行提升相关领域的业务水平提供技术支持。新股东的资金到位后,近60亿元的注册资本金使兴业达到8%的资本充足率下限,符合国内上市的要求。兴业银行有关负责人说,该行在2003年年底将结束上市辅导期,争取在2004年上市,而首选的上市地点是国内A股市场。

## 最佳公司治理

### 南京商行七年潜心治理修得正果

12月1日,银监会主席刘明康透露,南京市商业银行在明年适当时间里将成为城市商业银行当中第一家在资本市场上市的银行。目前,该行的资本充足率达到17%。

南京市商业银行七年股份公司构架的运作使其一直保持着较为先进的经营理念和管理水平,尤其是2001年,国际金融公司入股使南京商行与国际接轨的步伐大大迈进了一步,在针对内部管理、法人治理结构、业务创新等方面,也发挥了重要的作用。

成立之初,南商行的不良贷款率对外公开为11.96%。对这块历史痼疾,南商行每年拿出五六千万进行核销,使不良资产率一度保持在7%到8%之间;从2001年开始,IFC聘请的普华永道会计师事务所每年按照国际会计准则对南商行前一年度的财务状况进行全面审计,并出具“经营管理建议书”,南商行都相应作出经营管理上的调整;2003年

年初,南商行又在总行与支行之间设立了8个中心支行,被称为“两级半管理”,以缩短管理半径,提高效率;根据美国董事参考国际银行惯例的要求,所有会议材料必须提前10天送到所有董事手里,并且所有提案应附有调查论证材料或可行性报告;七年来南京商行从未间断的人力资源大调整使南京商行几乎置换了一半以上的人员。

IFC执行副总裁彼得·沃奇在当年参股签约仪式上的一句话得到了应验:“我们希望用三五年的时间,使南商行的经营管理水平有一个质的提高,树立中国银行业的样板。”

## 银行业三大法获通过 改变了什么

2003年12月27日,十届全国人大通过了银行业监督管理法、关于修改中国人民银行的决定、关于修改商业银行法的决定。三大法于2004年2月1日起正式施行。银监法和修订后的中国人民银行法分别明确规定中央银行的职责和银监会的法律地位,货币政策职能得到提升;业界一致认为,修改后的商业银行法第43条增补“但国家另有规定的除外”,为混业经营留下了法律空间。

## 证监会年底忙立规 有紧有松

2003年12月21日《股票发行审核委员会暂行办法》发审委委员名单首次公布于众,并设专职委员。

2003年12月28日证券发行上市保荐制度暂行办法明确了保荐责任和保荐期限,建立责任追究的监管机制。

2003年12月18日《证券公司客户资产管理业务试行办法》使挣扎在寒冬季节的券商一展欢颜。未来35年内,券商之间优胜劣汰的进程将进一步加快,而券商与基金在受托理财业务上的竞争也将更加深入,形成新的机构博弈局面。

## 国际评级引轩然大波 国内银行有异议有行动

2003年底,标准普尔依据公共信息对八家中国内地银行予以评级。美国《华尔街日报》评论认为,此次被评的八家银行全部被定为垃圾等级。其后,穆迪公司在类似评级

中把工农中建四大国有银行的信用评级从原来的Baa1上调至A2，同时调高招商、浦发银行的评级。两项评级的结果及其差异在国内银行业引发轩然大波。

### [链接]

2003年12月9日，中国银监会发布《关于将次级定期债务计入附属资本的通知》。分析人士认为，这对国内多家资本充足率徘徊在监管标准附近的银行，可以说是“救危难于水火之中”。

### [视角]

- 浦发银行证券代表杨国平：事实上，标普对中国大陆的主权评级仅为BBB；而且，对于“大客户”，标准普尔和国内监管机构有不同定义。
- 中国银行国际金融研究所谭雅玲：在走向国际市场过程中，高起步、严要求，对发展和改革是有益的。
- 中国社科院金融研究所研究员易宪容：如果国内银行去国外发债或者上市，国外投资者将把这个评级作为一个比较重要的参考指标。
- “欧洲货币”主席方弈伦：一些国际评级机构之所以会得出不同结论，是因为他们关注中国的角度不同，个别国际机构只注重中国银行业的大量不良资产，而忽视了中国经济的强劲增长带给中国银行业的发展机会。
  
- 穆迪亚太区副总裁严序纬：中国的商业银行应该增加透明度，充分披露财务信息，改进公司治理，同时应该改革企业文化——中国的银行业目前还是从上而下的治理机构，而根据市场这只“看不见的手”，中国银行业最终要以客户为中心，实行从下而上的治理结构。

### 统计模型和统计思维 在个人信贷管理中的应用

萧 兵<sup>+</sup>

个人信贷在现代商业银行的整体业务中占有十分重要的地位。以美国银行业为例，其前五大银行依次为花旗银行、大通银行、美洲银行、富国银行和沃考维亚银行。在这前五大银行中，个人信贷已超过银行总贷款量的百分之六十，而商业贷款只占不到百分之四十。尤其是近年来商业贷款受经济萧条的影响而停滞不前，银行业更是在发展个人信贷方面投入大量精力，使个人信贷成为美国银行发展的主要动力之一。

由于美国个人房屋贷款大多通过资本市场的运作来完成，个人房屋贷款只是商业银行信贷资产中很小的一部分。商业银行个人信贷资产主要包括信用卡、房屋净值贷款、汽车贷款、个人无抵押贷款及学生贷款等。尽管产品不同，但个人信贷的共同特点是可以有效地利用大型数据库和复杂的统计模型来管理信贷运作中的每一个环节。

简单地说，统计模型的基础是建立在用已经发生的大量同类事件以及它们之间的关系来推断此类事件在未来发生的概

率。因此个人信贷交易量大、每笔贷款较小和客户较相近的特点正是应用统计模型最理想的产品。在具体运作中，统计模型在以下几个方面尤其成功：

首先，统计模型是信贷风险评估的重要工具之一。在现代化的商业银行中，以统计模型为基础的风险决策系统可以在几秒钟之内决定贷款人的风险率并推荐最佳的产品选择、信贷额度和利率。在此系统中占有中心地位的是用统计模型来计算的客户风险计分卡。一般计分卡又分两个部分，一部分基于银行外部信贷数据（美国有三家全国性的信贷数据机构），在这方面较著名的有 F I C O 信贷卡。另一部分基于银行内部客户数据，这部分计分卡常由银行内部的风险专家设计和管理。两部分相结合，即可以得益于同业最先进的数据和模型，由可以利用银行内部的数据建立自身的特点和增强市场竞争力。大量的实践证明利用风险决策系统不但节省了银行费用和提高服务质量，更重要的是和人为的决策相比可以更有效地控制信贷风险。

其次，统计模型在增加销售效率上也有着广泛的应用。个人信贷常常在销售上利用直接销售渠道（邮寄和电话销售），统计模型可以根据已往客户销售的数据来推断同类客户对未来某一产品感兴趣的程度并由此制定相应的销售策略。统计学在个人信贷销售中的另一个应用是建立一套有效的客户分类系统，利用分类系统可以确定优质客户并发现其共同特点，利用这些特点销售部门可以在银行内部和外部的数据库中寻找符合这些特点的潜在优质客户，提高银行的整体销售效率。

统计模型的应用在个人信贷的客户管理上也十分重要。在现代化的商业银行中，个人信贷产品的经济效益在很大程度上取决于客户售后管理。银行常常利用统计模型定期重新评估客户的风险和性价比

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值，并由此制定出客户的价值指标。银行可以通过这些指标决定增加或减少信贷额度、是否调整利率、是否减免费用以及如何销售其它产品等等。一旦客户出现拖欠债务的情况，统计模型还可以帮助评估客户风险的严重性和回收率，协助制定有效的债务回收策略。

偶尔和国内同行谈起美国个人信贷管理的经验，国内同行的感觉是美国的模式虽好，在国内银行现有的情况下却难以应用。国内即无成熟的信贷数据库，产品在利率等方面又有诸多限制。而没有一个成熟的个人信贷市场，客户信贷数据库又难以建立。总之是一个鸡生蛋还是蛋生鸡的问题。这种顾虑虽有一定道理，却是对借鉴国际先进的个人信贷管理经验的一种误解。统计模型在美国银行个人信贷管理上尽管占有十分重要的地位，而更重要的却是银行的高级管理层中普遍存在的一种统计思维方式。具体的统计模型只不过是这种思维的一种体现，或者说是应用这种思维的一种工具。美国个人信贷业务的发展，以及许多新开发的产品和市场，在其初级阶段也是即无客户也为数据，而以统计思维为基础的策略和管理方式是成功地发展和建立市场的关键。统计思维在个人信贷管理上尤其体现在以下两个方面：

首先，是利用试验的方式来测试几乎所有可以测试的方面。从产品设计、利率、收费、销售方式、客户风险到系统设计和客户服务，都可以用统计采样的方式设计有效的客户试验。从管理的角度讲，一方面鼓励大胆试验，允许失败，另一方面又要保证即使最坏的情况发生（尤其在风险试验方面），也不会对部门造成不可弥补的损失。

其次，在部门上下建立一套重视科学和以数据为依据的决策和奖罚制度，而不是以领导者的个人观点为标准。只有在

这种环境下，才能最大地利用试验的结果并保证决策的理性化。

古人云，“千里之行，始于足下”。在国内大力发展个人信贷业务的今天，当务之急是建立起一套以统计思维为基础的科学管理方法和管理人才。只有当这套思维方式在企业中建立起来后，先进的数据库和复杂的统计模型才能有效地发挥其应有的作用。

### Real-time Risk Management System

Steve Mu

With BASEL Accord II to be effective in 2006, major commercial banks are now implementing risk management system in order to compliant with the regulation. The system must provide support for analyze different type of risks involved, with software components guarantee the risk management policy enforced. The purpose of this article is to discuss briefly on how these issues are resolved in a commercial banking environment.

#### 1. WHAT IS THE RISK

In a commercial banking environment, we encounter the following major type of risk:

- Market Risk
- Credit Risk
- Operation Risk

Market Risk comes from daily financial instrument price/rate fluctuation, such as stock, bond, interest rate, foreign exchange, etc. These movements cause bank assets value change in the direction favorable or un-favorable. To manage the profit-and-lost due to market movement, bank applies strategy to reduce the risk by limiting or hedging the positions. Since market risk only exists when bank takes certain position, this type of risk is also termed position risk.

Credit Risk arise when bank essentially making a loan to a counter-party. The risk is the counter-party may not be able to pay back the loan at maturity, causing a lost to the bank. In forward contract, unlike loan, exact amount due to the bank is not known until the maturity. The risk is the counter-party may not be able to pay in case the bank is in the money. In either case, the risk is the counter-party may not be able to fulfill its obligation to pay. For this reason, this type of risk is also called counter-party risk.

BASEL committee defines Operation Risk as lost due to process, human, system and external events. (External events include external fraud, security breach, regulatory effects and natural disasters.) In recent

years, the most sever loss to bank are due to operation risk. A good example is the bankruptcy of Barings in 1995, which a rookie trader inadequately allowed to manage both trading and accounting operations. He amasses unreported loss of \$1.3B for 2 years causing the bank insolvent.

Besides these types of risk, there are also others that are commonly encountered in a commercial banking environment:

- Liquidity Risk
- Reputation Risk
- Relationship Risk

Liquidity Risk arises when transaction size is too large or unable to come with enough cash to fulfill a financial obligation. Reputation Risk is usually associated with other risks, where a bank's reputation is damaged as the result of default or other unsatisfactory services. Relationship Risk is the risk associated in keeping a business relation. Customer Relationship is one of the most important relationships to a bank. Relationship Risk in commercial banking is more closely related with Credit Risk. These risks are more difficult to capture because they are inter-related with other type of risks. We will not go in details on these types of risk.

#### 2. WHAT IS THE MANAGEMENT

In order to manage the risk discussed above, senior management of the bank develop best practices based on industry regulatory recommendations. Common setup of the best practices contains three pillars:

- Policy
- Methodology
- Infrastructure

The Policy should reflect the mission statement of the bank. In a commercial bank, usually, this is in frame of increasing shareholder value, which is equivalent to providing a return that is consistent with the risks assumed. In practice, the bank needs to specify the extent of risk that it feels comfortable of taking. This translates into limits on market risk, credit risk and operation risk in normal business scenario and stress testing analysis.

The risk limits cannot be implemented without an appropriate Methodology to measure, control and manage the risks. These require state-of-the-art analytic model, software components and real-time monitoring system. Later in this article, we will discuss in some details on how such a system can be developed.

The Policy and Methodologies cannot be implemented without an appropriate Infrastructure. This includes organizational design that reflect the risk management philosophy, people with the requisite training, expertise, compensation and software/hardware system that can support risk management decision. We will discuss these issues in another article.

### 3. OTHER FINANCIAL SYSTEMS

Risk Management System is only one of many financial systems in a commercial banking environment. Increasingly, bank looks for technology for improving their efficiency and competitiveness. Among others, following systems are critical to bank operation:

- Trading System
- Settlement System
- Payment System
- Accounting System

Trading System allows the banks to manage the trade with their counter-party. Different from dealing stations, such as Reuters or Bloomberg's EBS, banks use trading system for handling the OTC trades and/or maintaining trades made from public or private trading exchanges. The trading system is essentially a trade editor for viewing trade detail and post processing. Bank's trading system must be able to communicate with dealing stations in order to capture a deal quickly, however, only record in the trading system is official. Therefore, dealing stations cannot substitute the role of trading system in a bank.

Settlement System is responsible for confirming with counter-party on the trade financials, such as dates, rates and notional. In addition, the settlement system confirms settlement instruction including netted payment amount before sending the instruction to Payment System. This is the

center of back office operation; automation of this part of is essential to the processing capability of a bank.

Payment System is for generating payment format required by different electronic or paper payment devices according to counter-party's instruction. Similar to settlement system, payment system is a crucial back office operation that requires automation. The separation of payment system from settlement system in back office reflects an important organizational design for risk management principal.

Accounting System is responsible for keep tracking, reporting activities, such as trading and payment. Accounting system implements regulatory required accounting standard and prepares balance sheet items for the bank. Before modern risk management concept was developed in the early 70's, accounting system performs the risk management role for quite a long while through the use of end-of-day profit and loss report.

Essence of the Risk Management System is to estimate the potential loss ahead of time so that proper action can be taken. This concept is quite different with Accounting System where a historical loss is reported at the end of day. Since risk management decision is based on the potential impact of a trade, it is important that risk be estimated before a trade is executed.

However, typically in a commercial banking environment, there are several dealing stations distributed in a number of trading desks around the world. Those dealing stations are interfaced with the bank's trading system. In reality, by the time a deal gets into the bank trading system, the contract is already made. How to design the risk management system that works with other financial systems is a major challenge in a commercial bank. We will explore this issue in detail in the following sections.

### 4. RISK MEASURE AND AGGREGATION

As we discuss earlier, one of the important aspects of risk management objective is how to measure and aggregate risks. The nature of the risks is uncertainty; it is difficult to predict. Modern risk management utilizes

probability model and statistics analysis to capture the uncertainty. In the following, we briefly review some of the techniques in implementing the risk measures:

- Market Risk Measure
- Credit Risk Measure
- Operation Risk Measure

In modeling market risk, it is assumed that financial market can be represented by a selected system of market traded instrument. Price of any asset can then be determined (arbitraged) by these basic instrument prices. These basic instruments are called market risk factors. An asset can be linearly approximated by these risk factors (at least in a short period of time); the linear approximation is called market risk exposure. By modeling the market risk factors, one can model asset price behavior. The most popular model in this approach assumes that market risk factors follow normal distribution and market risk exposure of an asset is relatively constant. With this assumption, one can get historical covariance matrix for the market risk factors. Variance of the asset can be obtained from the quadratic form of the covariance matrix and the market risk exposure. Under normal distribution assumption, we can calculate the downward potential at 95% confidence level as the market risk measure. This risk measure is called Market VaR (Value at Risk).

Credit risk modeling includes three parts: default, exposure at default and lost given default. Default, which is a discrete state (called default event) of the counter-party, occurs with some probability – default probability. (Default events can be continuous as well, for example, slow credit loss in time.) Lost given default represents the fractional loss (un-recoverable loss) due to default. Default risk model defines and estimates for all possible default events, the default probabilities and lost given defaults. In practice, default risk is characterized by credit ratings, such as those provided by Moody-KMV, Fitch or S&P. Exposure at default (also called credit exposure) measures the economic value of obligation on the counter-party at the time of default. For OTC contract, the economic value of obligation is the total of replacement cost (mark-to-market) of the contract and the

best estimate for the remaining value of the contract. In practice, the remaining contract value (called residual risk or potential risk) is usually approximated by the upward potential of its market value at 95% confidence level. For contracts that can be easily replaced (with good liquidity), the dominant term in the exposure at default is the replacement cost (market-to-market value). The expected value (or averaged by default probability and lost given default) of exposure at default is a credit risk measure, called Credit VaR.

Operation risk model is difficult to develop because operation risk is usually attributed to a combination of market risk and credit risk along with some failure of controls. The most popular one is using the Actuarial Model, in which the bank record its own loss events over a fixed interval of time – called loss frequency distribution – and the size of loss for each event – loss severity distribution. Assuming the frequency and severity of loss are independent, through convolution, the two distributions can be combined into one joint loss distribution. The expectation of the resulting loss distribution at 95% confidence level is an operation risk measure, called Operation VaR.

In general, VaR approach depends on historical data for calibrating the risk model. For this reason, even though VaR is a forward-looking measure (comparing with accounting), it can best forecast “expected” loss under “normal” risky environment. In addition, many simplifications in developing the VaR measure may not hold in regular business environment, for example, market risk exposure through linearly approximate asset value by risk factors in Market VaR. If the forecast period is long or the asset exhibits extremely non-linear behavior (barrier type of Options), this assumption would not hold. Therefore Market VaR can best be used on asset with linear behavior and in shorter period, such as a few days. In Credit VaR, the underlying risk period is usually long and the historical data for default is hard to find, the bank usually takes conservative approach by over estimating the risk. Despite these short falls, VaR does capture most of the daily risks in a bank. The banks manage this type risk by enforcing the limits and/or hedging.

Due to the imperfection of the VaR approach, stress testing is also important for measuring the risks. To perform the analysis, the bank specifies a set of anticipated risk scenarios and compute the weighted average of the asset value or credit exposure under those scenarios. This analysis allows the bank to observe the risk under “extreme” events. Because the “extreme” happens only rarely, the best way to manage this “un-expected” loss is to buy insurance.

Factors that affecting the risk measure and aggregation also includes

- Collateral And Other Risk Mitigation Techniques
- Pre-Settlement And Settlement Netting Agreement
- Trade Through Exchange Or OTC

These are important when computing VaR for a portfolio of trades. For example, with a standing netting agreement, two trades that essentially in opposite direction could cancel each other when aggregating for Credit VaR. However, without the netting agreement, the trades can not offset each other because at default, the bankruptcy court may rule in favor of the counter-party, in which the bank must honor the trade in favor of the counter-party without (or postponed indefinitely) getting paid on the other trade. This is called “cherry picking” by the bankruptcy court.

## 5. RISK MONITORING AND REPORTS

As an important part the risk management policy, senior management assign limit for each risk measure category. These limits include position limit (market risk limit) and counter-party limit (credit risk limit). Operation risk is a new risk category. Its limit and exposure are more treated like an alert; they are not enforced in real-time. The bank monitor and report the following limit usages:

- Real-time position VaR and counter-party VaR
- Stress testing on position risk and counter-party risk

As we discussed in a previous section, managing the total risks in real-time for a bank is difficult because there are several

dealing stations distributed in a number of trading desks around the world.

Even worse the dealing station would not check the credit limit usage; by the time a deal gets into the bank trading system, the contract is already made. The good news is that every dealing station allows setting certain trading limit. These trading limit are not related to any risk measures we discussed above. Nonetheless, it provides a way to enforce the risk limits by making sure that the trading limits are managed. Therefore, for trades through dealing station, risk management is managed on the trading limit, not on single deals. For OTC trade or trade booked through bank trading system, the risk management is on the individual deal. Risk limits are monitored and enforced on these two different levels.

For monitoring and enforcing the limits in real-time, following applications must be available to the user in all time:

- Real-time What-If-User-Interface (WIFUI)
- End-of-Day Limit Usage Reports
- End-of-Day Limit Exception Reports
- Periodical Stress Testing Reports

The Real-time WIFUI provides the limit usages and allows user to observe the impact of a hypothetical trade to the limit usages. If the limit will be broken, the trade will not allowed go through without risk manager’s approval. This is important for risk management principal, because the key for risk management is forward looking. There are two types of WIFUI: one is for trade and the other is for trading limit. The WIFUI for trading limit allows risk manager to determine if a hypothetical trading limit can enforce the risk limit. The WIFUI also allow risk manager testing different hedging strategies (hypothetical trades), so that risks in each category can be reduced.

The End-of-Day Limit Usage Reports are the daily official record of limit usage. The record provides valuable historical data that can be used in further analysis (data mining for instance). Similar to WIFUI, the usage of the risk limits and conservative estimates on the impact of trading limit to actual risk limit usages are reported. This will form the base for modification of the trading limit next day, so that risk limit are preserved.

The End-of-Day Limit Exception Reports record over limit usage events. This report gives the risk manager a quick way to spot problem. In practice, risk limits may be over used, but the exception must be recorded. In addition, a limit exception can only occur before the trade is executed. If a limit is broken without approval first, the event will be recorded in the operation risk event log.

The Stress Testing Analysis is performed on periodical bases. Senior management reviews the scenarios used in the analysis. The scenarios reflect the banks view on financial future and as a result, the banks opinion on the risks. Stress testing often used on derivative portfolio and/or long maturity trades. Even though there is no hard limit to monitor in real-time, the results are used for finding the most risky "spots" in bank position in term of non-linearity or maturity. Those trades will need to be analyzed carefully.

## 6. ARCHITECTURE ISSUES

The relationship of the risk management system with other financial systems, such as trading system, settlement system and payment system, is important in the architectural design. To support the risk monitor and reports, we need to be careful about sharing the resources already exist in the other financial system. While it is not the purpose of this article to review the architecture for all financial systems, we will briefly discuss some of the most important component that a risk management system must have. These components include:

- Credit Rating Component
- Risk Factor Component
- Risk Limit Component
- Risk Expo Component
- Risk Event Component

The Credit Rating Component provides the support for the Credit Risk Model (Credit VaR). Basic requirements for this component is to provide the default probability and lost given default based on credit ratings (or methods) from rating agency, such as Moody-KMV, Fitch and S&P. In addition, bank also develop internal rating model for expressing bank's view on counter-party's credit worthiness.

The Risk Factor Component provides the support for Market Risk Model (Market VaR). This component provides the covariance analysis on historical market price. The resulting covariance matrix is essentially the market risk model. The component is also responsible for back testing the model quality required by the BASEL. Stress testing scenarios are maintained and managed by this component.

The Risk Limit Component maintains the limits for risk measures, such as Market VaR; Credit VaR and Operation VaR. More complex than a flat total limit, structure of the limit can be on trading desk, maturity and counter-party, based on bank's need for enforcing the limit. The component also maintains and manages the trading limits that are synchronized with the ones on dealing stations.

The Risk Expo Component provides the support for risk exposure calculation and aggregation from bank perspective and/or from counter-party perspective. This is the most important component because it implements the risk computation framework: Retrieve data from outstanding trade record; Retrieve risk model parameters, such as risk factors and credit ratings; Compute the VaR measures; Checking the risk exposure against its limit; etc. This component also persists daily risk exposure into database for future analysis. Stress testing framework is also implemented on this component.

The Risk Event Component provides the support for catching any exception messages from the Risk Expo Component. This exception message indicates that limit would be broken and proceeds with preprogrammed action, for instance, sending notification messages to the risk manager. This component persists the notification event as well as the respond event from the risk manager. Trade can only go through if the risk manager approves the exception. The events are used for future reference.

## 7. INTEGRATION ISSUES

Because of the real-time requirements for the risk management system, data integration is an important issue. As we discussed earlier, trade through dealing station must flow into the bank trading

system in real-time. However, most banks have “fire wall” implementing bank security policy. Therefore, the communication between dealing stations and the trading system must cross this “fire wall”. The security issue needs to be addressed carefully when integrating these systems. On the other hand, outstanding trades on bank trading system must be netted by the settlement system before risk exposure can be calculated, the speed of updating a new trade into the netted exposure data table has big impact on the system performance.

Perhaps, the most difficult issue associated with integration is probably the bank legacy systems. The cost and potential risk in replacing these systems make it a difficult decision to make for the senior management. This is a complex issue and it does not seem to have a standard solution for all banks.

## Balancing Between Today and Tomorrow: The Way to Build a Secure Retirement

Carole Zhou, MBA, CFP®<sup>+</sup>

In our life there are several things we might think are very important to us: a dream house, fancy furniture and appliances, an elegant car, children's education, luxury vacations, a comfortable retirement, etc... Among these, I daresay retirement ought to be one of the top priorities, since for the rest of the list you pay as you go - and that happens when you are working or when you are with earning power.

Quite frequently people get asked: "Can you afford to retire and still maintain a reasonable lifestyle after that?" If you find it hard to answer, then I would like to point out a harsh reality: one of the biggest risks we face today is not just the risk of letting our lifestyle slip away during our retirement but the risk of outliving our financial resources. Further, although we expect to live a healthy longer life, it's wise to prepare for an unhealthy longer life (and you know why, because it will cost a lot more). It also takes more planning, commitment and financial resources to accomplish this goal.

As many of us might know, traditional company-managed pension plans are becoming a thing of the past, and social security is questionable. So it is critical to allocate your financial resources wisely between today's enjoyments and tomorrow's security. It takes careful planning and discipline to be able to reach a joyful and dignified retirement.

I have one client who is 93 years old now who retired at age of 72. Unfortunately he's been paralyzed for more than 20 years. That means his monthly bill is around \$13,000 covering the costs for nursing home, medicines, medical equipment, etc... He still needs to support house expenses for his same age wife (who fortunately is relatively healthy). This elderly gentleman is fortunate enough to have a very comprehensive retirement plan set up by

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his previous and current financial advisors. That is in addition to his company-sponsored pension plan and social security retirement. He has three different annuities with life income streams, which not only cover the difference between the amount of money he needs and the sum provided by of the company pension and social security retirement benefits, but also leaves him with some surplus. Just like the company pension and the social security the income generated by the three annuities mentioned above are life time guaranteed, so he does not need to worry about outliving his financial resources.

There are numerous types of retirement programs available: one of them, defined benefit pension plans, which we heard about in the early days are rarely to be seen nowadays even if some corporations are still funding 412i plans for their executives. But you don't have to be an executive in order to take advantage of retirement plans: there are still plenty of other vehicles for retirement planning, such as 401k (including regular defined contribution plans, solo 401k, super comp 401k and safe harbor 401k), Age Weighted & New Comparability Plan, Profit sharing plan, 401a, 403b, Keogh, Simple IRA, Sep IRA, Traditional IRA and Roth IRA. There are also fixed annuities, variable annuities, modified endowment contracts (MECs) or some other life funds with decent retirement income stream options.

Some of these plans are for corporations, s corporations and partnerships. Some of them are for individuals and self employed sole proprietors. Depending on one's situation, he or she can have one or more plans set up to max out tax savings and retirement income.

For most of the programs above, contribution and growth are tax deferred and the effect of tax deferred growth can be very significant. In your taxable investment accounts, you pay tax on dividend and interest declared each year. You also pay tax on the realized gains on stocks, bonds, REITs, etc... No matter whether you sell your mutual funds or not or whether you reinvest your dividend into mutual funds or not, you've got to pay tax on the unrealized capital gains and reinvested dividends as well.

Here is my piece of advice to you. Start early by figuring out what you need or wish to

have when you retire. Have a good plan and implement it well. Be disciplined and put time to work for you. Taking action now is better than waiting: time is money.

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