RISK EXPOSURE AND RISK MANAGEMENT PRACTICE

OCBC Group's primary business activity is commercial banking, which is essentially a customer-driven activity where the substantial risk is the credit risk of corporate, institutional and retail customers. To a lesser extent, commercial banking is also exposed to market risk arising from re-pricing, maturity and currency mismatches of assets and liabilities. These mismatches give rise to interest rate, liquidity and foreign exchange risks.

Treasury and investment banking activities, which include sales and trading in money market, foreign exchange and other treasury products, the underwriting of equities and bonds are currently less significant in comparison to the commercial banking business. These activities also expose the Group to credit risks and market risks including interest rate, currency and equity risks.

In the course of conducting its businesses, the Group handles a large number of financial transactions. It is inherently exposed to the operational risk of failure of internal processes and systems, deficiencies in people and management, or operational failure arising from external events. The provision of financial advisory services to customers for wealth management products, including the sale of unit trusts and life insurance, also exposes the Group to operational risks arising from the failure to meet the general standards expected of such financial advisory activities.

The main aim of risk management in OCBC Group is to protect against extraordinary or exceptional losses that could arise from taking risks beyond its risk appetite. The Group's philosophy on risk management is that risks must be properly understood, monitored, controlled and managed. In addition, risk management processes must be closely aligned to the Group's business strategy. The ultimate goal is to enable the Group to maximise its risk-adjusted return on capital.

RISK ORGANISATION

OCBC Group believes that risk management is most effective when it is a shared responsibility between risk takers and risk controllers, with the Board of Directors providing general oversight. The risk organisation is structured such that there is segregation of duties and reporting lines between risk-taking and risk-controlling units. These principles are applied across the major risk areas, including credit, market and operational risks. Accordingly, the Group Risk Management Head has a dual reporting line, one to the Chief Executive Officer ("CEO") and one to the Executive Committee which represents the Board in overseeing risk management.

The Group has, in recent years, been building its resources and capabilities in risk management so as to keep pace with business developments. As banking products invariably contain a varying mix of risks from different risk categories, the management of risk must be looked at holistically. The establishment of the Group Risk Management Division in 2000 recognises the need for an integrated risk management framework and capability.

Group Risk Management Division is tasked with the primary responsibility of managing credit, market and operational risks. The Division is staffed with officers dedicated to risk policy setting, risk measurement methodology and model development, and the measurement and monitoring of the OCBC Group's risk profiles and concentrations. In the case of credit risk, dedicated officers are also involved in transaction approval and remedial loan management. Outside Group Risk Management Division, other functions in the Bank that support the risk management framework include Legal and Compliance, Internal Audit, Operations, Finance and the respective business units where risk is taken / generated.

CREDIT RISK MANAGEMENT

The Credit Risk Management Committee ("CRMC") is the principal senior management committee that supports the CEO and the Board in general credit risk management oversight. The CRMC reviews and recommends credit risk policies for the approval of the CEO or the Board. It is also responsible for ensuring that sound credit risk methodologies and effective credit risk management processes are established.

The CRMC includes representatives from major business units, where credit risk is generated, as well as independent credit risk controlling units. This joint effort in setting risk policy seeks to ensure understanding of and commitment to the credit risk management process.

The CRMC is supported by the Credit Risk Management ("CRM") departments within Group Risk Management

Division. Dedicated CRM units perform the roles of developing risk policies, guidelines and procedures and putting in place the monitoring, reporting and control systems.

Credit Risk Policy Setting
CRMC meetings are typically held monthly to focus on credit policies and the approval of new credit programmes. The Committee also assesses the Group's credit exposures along various risk dimensions, with special focus on non-performing loans ("NPLs"), as well as the domestic and regional environment and selected financial and economic indicators.

Credit Portfolio Management
The Bank is continuing to develop credit risk grading models to enable it to better differentiate risks in the various segments of its credit portfolio for better decision making. Efforts are underway to validate these models. The Group is also continuing to develop a centralised credit risk database to store key credit risk data for the Group to more efficiently monitor its credit portfolios.

Credit Approval Process
For the corporate lending business, a specific credit approval structure approved by the Board of Directors is in place. All credit extensions are jointly approved by authorised officers from the business units and the credit control unit. This "co-grantor" approach is designed to ensure objectivity and appropriate check and balance in credit extensions. Beyond pre-defined exposure thresholds, approval from the Large Credit Approval Committee, comprising senior managers from business units and senior credit managers, is required. In certain defined circumstances, approval of the CEO is also required. Credit extensions to corporate customers are generally required to meet pre-defined target markets and risk acceptance criteria.

In the consumer lending business where transactions are numerous and of smaller amounts, credit underwriters approve loans in accordance with pre-approved credit programmes. These programmes focus on credit extensions to individual customers with similar characteristics or product needs within defined parameters. Credit programmes are reviewed by the CRMC periodically or when outstandings per programme reach established limits.

Special Asset Management Unit
During 2002, a Special Asset Management unit was established to consolidate the supervision of remedial management activity for NPLs due from Business Banking customers. There is a separate delegated approval authority structure for NPL resolution, with senior management's approval being required for specific provisions, debt forgiveness and NPL write-offs. The unit also formulates recovery action plans to maximise loan recovery for each NPL.

This focused approach to NPL recovery has been adopted for all lending units, including overseas branches and OCBC Malaysia. The resolution of NPLs in international branches and OCBC Malaysia is carried out by local management with oversight and supervision by the Special Asset Management unit.

The resolution of non-performing consumer loans is similarly focused, and is managed by the relevant collections departments in the Group.

Loan Classification and Provisioning Policies
Loan classification
The Group classifies its loans in accordance with MAS Notice 612 and internal loan classification policies. Performing loans are categorised as 'Passed' or 'Special Mention', while non-performing loans are categorised as 'Substandard', 'Doubtful' or 'Loss', based on the following guidelines:

- Passed – Interest and principal payments are fully up-to-date, and orderly repayment and/or timely settlement in the future is without doubt.
- Special Mention – Currently protected but potentially weak. Borrower exhibits some deteriorating trends which, if not addressed or corrected, could jeopardise the timely repayment of interest and principal.
- Substandard – Timely repayment and/or settlement is at risk. Well defined weakness is evident.
- Doubtful – Full repayment and/or settlement is improbable.
- Loss – The outstanding debt is regarded as uncollectable

Restructured loans
A restructured loan refers to one where the original contractual terms and conditions have been modified upon mutual agreement between the Bank and the borrower. Where a loan is restructured because a borrower is facing severe financial difficulties and where it is probable that the account will have to be downgraded to non-performing status without the restructuring, the restructured loan will be classified as NPL. Once classified as an NPL, a restructured loan can only be upgraded after a reasonable period (typically six months) of sustained performance under the restructured terms.

Provisioning policies
The provision for estimated losses in the loan book is made up of two parts which are a specific provision against each NPL and a general provision that cannot be specifically applied and reflects the potential risk embodied in the loan portfolio. A minimum 1% general provision is made on the total amount of loans less total outstanding provisions, except for loans to the five regional countries, for which general provisions are made in accordance with MAS guidelines.

The specific provision against each NPL is based on the individual circumstances of each account after considering:
(a) the underlying business and financial viability of the borrower;
(b) the cash flow sources of the borrower;
(c) the quality and realisable value of the collateral and guarantee supporting the loan; and
(d) the existence of a valid and enforceable legal right of recourse against the borrower.

The specific provision against each NPL must comply with the following minimum amounts as prescribed by the MAS:

Substandard	–	10% (on unsecured portion)
Doubtful	–	50% (on unsecured portion)
Loss	–	100% (on loan outstanding)

Where appropriate, the Group makes additional specific provisions in excess of the MAS minimum requirements, taking into account the circumstances of each borrower, the collateral values and other relevant considerations.

In the second half of 2002, the Group further strengthened its credit process and implemented a number of measures to ensure early recognition of potential problem loans, including special mention loans, so that remedial actions can be taken earlier to minimise future loan losses. The measures implemented included an extensive portfolio review process to apply more stringent loan classification criteria, as well as the establishment of the Special Asset Management unit to consolidate the management of non-performing Business Banking loans.

The Group believes that the more proactive management of the loan portfolio and deployment of additional resources to problem loan identification had resulted in a better and more detailed assessment of possible loan losses. The increased emphasis on classifying loans more stringently, and assessing specific provisions on a borrower-by-borrower basis for non-consumer loans, has rendered the past practice of a pre-defined process of assigning specific provisions targeting 70% against the unsecured portion of substandard and doubtful loans redundant. This change in provisioning practice has not resulted in any material financial impact to the Group.

Write-offs
Write-offs of debts are made when recovery action has been instituted and the loss can be reasonably determined. For unsecured consumer loan programmes, the general policy is to write-off overdue debts after 180 days after the first default.

Ceasing of interest accrual on loans
Interest accrual effectively ceases when a loan is classified, except for overdrafts where interest continues to accrue even after classification.

Collateral held against NPLs
The major type of collateral backing for the Group's NPLs is real estate in Singapore. The realisable value of the real estate collateral is used to determine the adequacy of the collateral coverage. Proceeds from the sale of collateral pledged for a particular loan cannot be applied to other classified loans unless the accounts are related and cross-collateralisation of the facilities is provided for contractually.

Country Risk
A country risk framework is in place, covering the assessment and rating of countries, country review frequency, as well as the maximum cross-border transfer risk limit that can be granted to any one country based on its risk rating. Cross-border transfer risk covers all cross-border transactions including onshore non-local currency transactions. Limits are allocated into maturity time-bands and vary according to the risk rating of the country concerned and the political and economic outlook. Approving authority for transfer risk limits lies with the Large Credit Approval Committee.

Credit Concentration
The Group seeks to spread its risk exposure amongst the growing economic sectors of the major markets in which it operates. Limits are set on specific customer or product segments in order to avoid over-concentration of credit risks. Prudential limits have also been placed on exposures to single customer groups.

Property Exposure
The Bank's exposure to real estate in Singapore is regulated under Section 35 of the Banking Act which limits such exposure to not more than 35% of its total eligible loan assets. The Bank is in compliance with Section 35.

Information on credit exposures by geographical area, business line and industrial classification, and the breakdown of investment and dealing securities by issuer type, are disclosed in Notes 25, 27, 31, 38 and 40 of the Financial Statements and the Management Discussion and Analysis chapter.

MARKET RISK MANAGEMENT

Market risk is defined as the uncertainty in the future values of the Group's on and off balance sheet financial items, resulting from movements in factors such as interest rates, equity prices, foreign exchange rates and commodity prices.

Market risk management comes under the direction of the *Market Risk Management Committee* ("MRMC"). The MRMC is responsible for developing market risk principles and policies and for reviewing and strengthening the control and monitoring processes relating to market risk. The MRMC includes senior representatives from risk management, finance and relevant business units.

Asset liability management is under the direction of the *Asset Liability Management Committee* ("ALCO"). The ALCO is responsible for the oversight of liquidity risk of OCBC Bank and its banking and finance subsidiaries. In addition, the ALCO manages interest rate risks arising from the Bank's asset liability mismatches, within limits set by the MRMC. The ALCO comprises the CEO and senior representatives from risk management, finance and major business units.

Both the MRMC and ALCO are supported by the Market Risk Management Department ("MRMD") within the Group Risk Management Division. MRMD is responsible for developing policies and procedures as well as putting in place the monitoring, reporting and control systems for market risk as well as asset liability management.

Market Risk Management Methodologies
The main approach for managing market risks are:

Limit management – the identification and monitoring of risk exposures; and

Risk analysis – VaR methodology complemented by stress testing and scenario analyses.

Limit Management
Controls are put in place to ensure that all business activities conform with the organisation's risk management principles and philosophies. Each day, all trading risk positions are monitored daily against authorised limits by an independent group, the Treasury Control Unit. Exposures that exceed authorised limits are promptly reported to senior management for ratification. Only authorised activities may be undertaken.

Risk Analysis
Parametric VaR measurement is used for both derivative and non-derivative risk exposures. This risk measurement methodology is probability based, and uses volatilities and correlations applied to a 10-day holding period to quantify price risks in Singapore Dollars. Market risk is measured based on potential worst case losses or VaR. Losses are expected to exceed the VaR measure not more than once in 100 trading days. Overall market risk is determined by aggregating VaR measures for each of the foreign exchange, interest rates, equity and commodity risks, taking into account the portfolio effects of combining these risks. Correlations between risk types is assumed to be zero. This methodology covers all financial products traded by the Group, e.g. foreign exchange products, debt securities, equities, commodities and derivatives.

The following table provides a summary of OCBC's market risk profile in 2001 and 2002 .

Value-at-Risk Measure
(S$'000)

	2001			**2002**		
	Max	Ave	Min	**Max**	**Ave**	**Min**
Foreign Exchange	9,577	2,562	108	**5,212**	**446**	**1,774**
Interest Rates	15,802	3,114	55	**12,410**	**7,089**	**2,458**
Equity	3,565	1,087	0	**5,172**	**1,689**	**1,029**
Portfolio Effect	(7,508)	(2,416)	0	**(6,074)**	**(2,852)**	**(1,733)**
Aggregate	16,377	4,347	163	**13,268**	**7,700**	**4,144**

Figure 1: Distribution of VaR for each trading day of the year

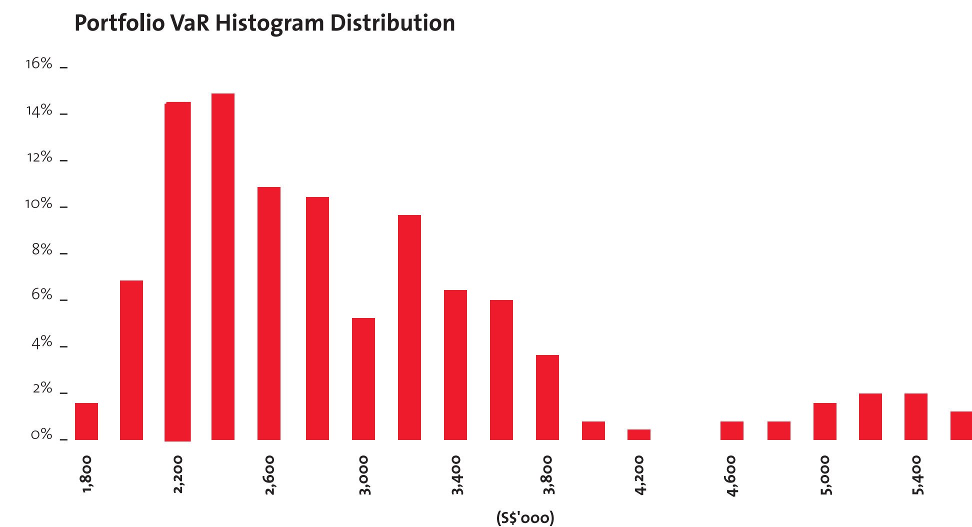
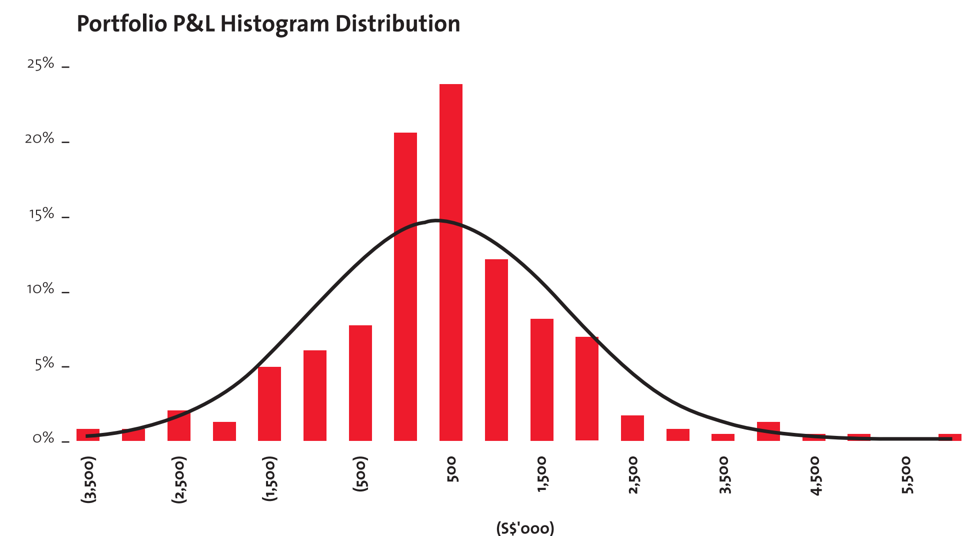


Figure 2: Distribution of Trading Income (Group Treasury) for each trading day of the year



Present Value of a Basis Point (PV01)
PV01 is an additional measure of interest rate risk that is computed on a daily basis. It measures the change in value of interest rate sensitive exposures resulting from a 0.01% increase in interest rates. This is a sensitivity measure that identifies the parts of the yield curve where exposures are most vulnerable to interest rate changes, and assists the implementation of hedging strategies.

Stress Testing and Scenario Analyses
Stress tests and scenario analyses have been implemented to help quantify financial risk arising from low probability, abnormal market movements. Stress tests help measure the effects on values arising from a range of extreme movements in market prices, based on historical experience and assuming that no actions are taken during the stress event to mitigate risk. Scenario analysis simulates the impact on the portfolio under extreme market crisis events. Scenarios are developed based on actual historical market data during periods of market crisis. Stress tests and scenario analyses are performed on a daily basis.

Back-Testing Framework
To ensure that the assumptions used in OCBC's VaR methodology are valid, a "back-testing" framework has been operational since the end of the second quarter of 2000. Back-testing compares the daily risk measures with the actual daily marked-to-market revenues of the related activity. Since its implementation, the back-testing results have continued to indicate that the methodology and assumptions used remain valid. Trading losses were well within the maximum predicted by the VaR model.

To ensure that back-testing results are not tainted by intra-day trading activities, VaR measures are also back-tested against "theoretical" profits and losses. Theoretical profits and losses are computed assuming that end-of-day market risk exposures do not change for a period of a day. These results were also found to be within the maximum losses predicted by the VaR model.

Interest Rate Risk
The main market risk faced by the OCBC Group is the interest rate risks arising from the re-pricing mismatches of assets and liabilities arising from its banking business.

The Group's loan portfolio comprises of floating and fixed rate loans. These are funded largely with demand, savings and fixed deposits. The funding mix varies for the Bank and its overseas subsidiaries. Corporate loans in Singapore dollars are generally priced at a fixed spread above the Swap Offer Rate, depending on the nature and size of the loan and the credit standing of the borrowers. Loans to small and medium sized enterprises (SMEs) and housing loans and other consumer loans are generally priced at a fixed spread above the Bank's Prime Lending Rate, depending on the maturity and nature of the loan, the credit standing of the borrowers, and other factors. Interest rates on deposits are set to reflect market and competitive conditions.

Deposit rates and the Prime Lending Rate are frequently reviewed and occasionally adjusted based on market and competitive factors. The primary sources of interest rate risk are short term repricing risk and basis risk. In addition, some of the Group's retail banking products have embedded options. These include prepayment rights on fixed rate loans, early withdrawal rights on deposits, and options on equities and equity indices.

OCBC Group has in place an Asset/Liability Management System, which allows the consolidation of asset/liability maturity and re-pricing mismatches on a bank-wide basis as well as in-depth analyses of current and projected balance sheet positions. Asset liability mismatches are actively managed with the aid of daily Repricing Gap and Sensitivity Reports. The Repricing Gap Reports allow analysis of the repricing profile for the Group's assets and liabilities. The Sensitivity Reports identify the parts of the yield curve where the Group is most vulnerable to changes in interest rates. In addition to aggregate sensitivity limits, there are also sensitivity limits for each maturity time band. The ALCO monitors interest rate risk exposures through tenor limits, net interest income changes as well as PV01 reports. Limits are reviewed annually.

Foreign Exchange Risk
The Group's foreign exchange positions, including those arising from foreign currency investments is actively monitored and managed. The general policy is for business units (other than Group Treasury) to fund foreign currency assets in the same foreign currency. Interest rate and currency derivative transactions are entered into for proprietary trading by Group Treasury and for the purpose of hedging interest rate and foreign exchange mismatches. The Group also enters into derivative transactions with its corporate customers including foreign exchange forward transactions and foreign exchange and interest rate swaps.

Liquidity Risk
The objective of liquidity management is to ensure that the Group has sufficient funds to meet its contractual and regulatory financial obligations at all times. Liquidity obligations arise from withdrawals of deposits, repayments of borrowed funds at maturity, extensions of credit and working capital needs. Liquidity risk is managed across all classes of assets and liabilities with the goal that, even under adverse conditions, the Group should have access to the necessary funds at reasonable cost to meet all its financial obligations. The focus is on a number of areas, including accessing available sources of liquidity, preserving necessary funding capacity and continuous contingency planning.

Liquidity risk is managed with the help of static ratios and scenario analyses. Static ratios monitor and control over-dependency on particular sources of funds and over-exposure to particular lenders or group of lenders. Apart from its normal liquidity cash flow projections, the system is continually stress-tested to ensure that the Group has the ability to withstand sudden and heavy cash outflows.

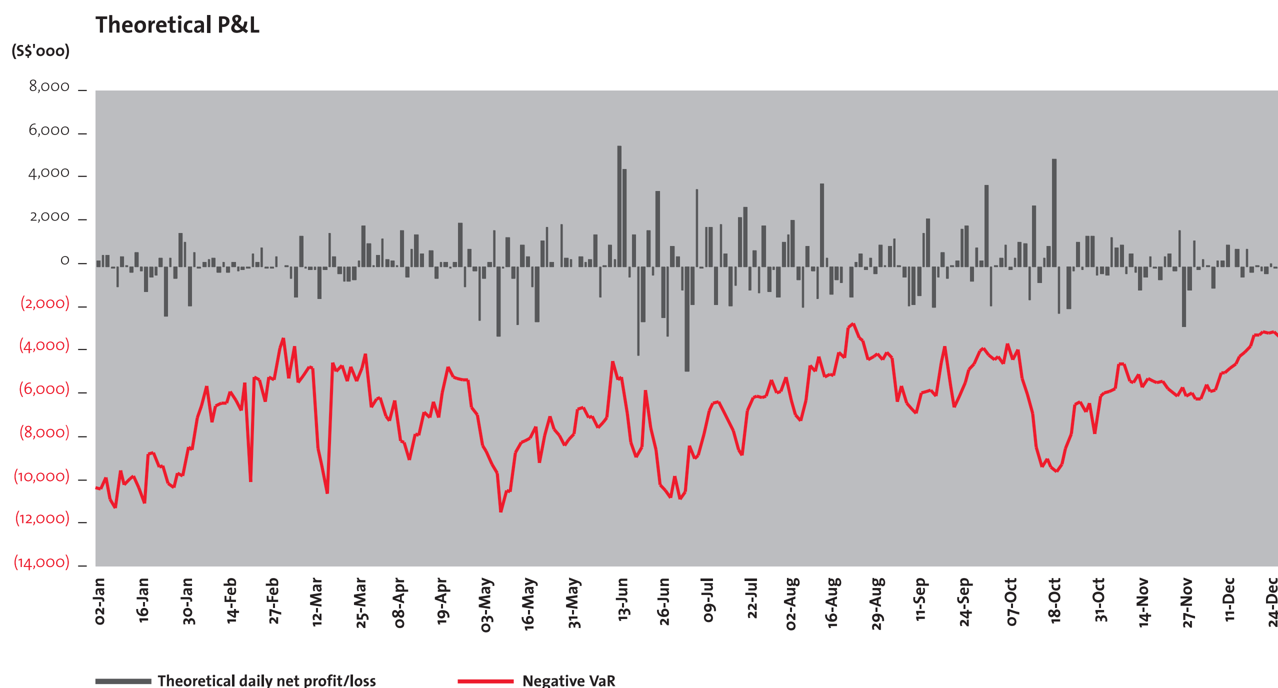
By virtue of its business base, the Group's funding is largely in Singapore dollars. Nevertheless, the Group has developed a broad funding base with different types of instruments, different markets and maturities of deposits. In addition, a minimum level of liquid assets is maintained which may be used in the event of a liquidity crisis. These assets comprise Singapore Treasury bills and bonds, as well as marketable shares and debt securities.

OCBC Bank maintains money market lines with a large number of domestic and foreign banks and has historically been a net provider of funds in domestic money markets.

Pursuant to MAS regulations, banks are currently required to meet an 18% statutory Minimum Liquid Assets (MLA) requirement, comprising Singapore Government Securities, Singapore Government Securities held under overnight repurchase agreements with, among others, banks in Singapore, and commercial bills of exchange in Singapore dollars, accepted or endorsed by banks in Singapore. In addition, banks are required to maintain minimum cash balances with the MAS equal to at least 3% of Singapore Dollar-denominated liabilities.

Monthly stress tests are conducted to assess and measure liquidity risk in the event of a bank run. These tests are performed on Singapore and U.S. Dollars cash flows. Bank specific as well as general market crises scenarios are simulated by deliberately stressing the normal operating cash flow profile through increasing the cash outflows and reducing the cash inflows.

Figure 3: Back-Testing of VaR measures against theoretical trading profits and losses (excludes OCBC Securities and OCBC Asset Management)



Some of the assumptions applied in the stress tests are:

- early withdrawals of non-bank deposits (savings, current, easi-save, fixed deposits)
- further drawdown of overdraft and credit cards
- defer repayment of matured interbank placements
- delay payment of new interbank borrowings

In July 2001, the MAS announced that it will be moving away from the 'one-size-fits-all' to a risk based liquidity supervision framework. This is to enable banks with strong liquidity management to maintain MLA between 12% and 18%. This bank-specific MLA requirement would be determined by the MAS and would be based on two main factors:

- the quality and rigour of the bank's liquidity risk management systems and processes, and
- the volatility of the bank's daily projected SGD cash flows.

OCBC has opted to be qualified for the new Liquidity Supervision Framework.

Information on the Group's financial assets and liabilities in relation to exposures to interest, foreign exchange and liquidity risks can be found in Note 39 of the Financial Statements and the Management Discussion and Analysis chapter.

OPERATIONAL RISK MANAGEMENT

Operational risk is the potential loss caused by a breakdown in internal processes and systems, deficiencies in people and management, or operational failure arising from external events. The goal of operational risk management is to minimise unexpected and catastrophic losses and manage expected losses. This enables new business opportunities to be pursued in a risk controlled manner and increases risk adjusted profitability through calculated risk and reward decision making. Operational risk management comes under the oversight of the *Operational Risk Management and Information Security Committee* ("ORISC"), which includes senior representatives from risk management, business units and relevant support functions.

The ORISC and the business units are supported by the Operational Risk Management ("ORM") Department of Group Risk Management Division. The ORM Department is tasked with establishing the operational risk framework, including policies and methodologies and provides independent oversight of operational risk monitoring and control. Within the business units, Operational Risk Co-ordinators have been appointed. There are also regular reviews of the business units by internal and external audit to determine their management of operational risks so as to ensure that key business processes are appropriately controlled and functioning effectively.

The ORM Department has developed an overall framework which defines the required environment and organisational components for managing operational risk in a structured, systematic and consistent manner. A comprehensive strategy has been formulated to provide a Group-wide integrated solution encompassing the roll-out of qualitative and quantitative tools and methodologies, with the provision of operational risk scorecards which will ultimately position OCBC Group to qualify for the advanced measurement approaches recommended by the Basel committee. The historical loss database is being enhanced with the implementation of a loss event and incident system that is aligned to both emerging regulatory and industry standards. A risk and control assessment program is currently being developed to reinforce our risk assessment capabilities. In addition, comprehensive operational risk awareness training programs are conducted on an on-going basis to cultivate a pro-active risk management culture within the Group.