Research Methodology

Risk Management Assessments

Summary

This research methodology outlines Moody’s initiative to comment on the quality of the financial risk management and related practices of certain major debt issuers with significant market and operational risk exposures. It links this effort to Moody’s credit rating process, explains our analytic framework, presents the Risk Management Assessment (RMA) reports, and discusses the RMA approach.

Moody’s objectives in focusing on risk management are:

• To inform the rating process by assessing the rigor of a firm’s risk management approach, its appropriateness to the firm’s business, and its impact on business decisions and future financial health

• To support fundamental analysts on specific risk and derivatives issues

• To provide fixed income investors with relevant and value-adding risk discussions by:
  - Identifying the key themes in risk management for specific industries
  - Highlighting areas for potential improvement in risk management, particularly related to disclosure
  - Explaining benchmarks against which individual companies in each segment will be evaluated and differentiated from one another

The key targets of the RMA process are large global financial institutions and large corporates with significant economic exposures to financial, commodity or energy risk.

Moody’s risk management assessments will result in three types of reports:

• Industry RMA: will investigate the overall quality of risk processes for key competitors within a global industry

• Individual firm RMA: will comment on the quality of a specific company’s risk management

• Special Comments: will present Moody’s views on specific risk issues such as: development of economic capital methodologies, emerging best practices in operational risk, etc.

The RMA process will also provide input for our general credit reports on issuers, typically in the form of a distinct section in these publications.
The RMA and the Rating Process

The RMA is part of a broader Moody's program called the Enhanced Analysis Initiative (EAI). EAI brings greater scrutiny to five areas of crucial importance to the creditworthiness evaluation of a company:

- Quality of financial reporting (Financial Reporting Assessment, or FRA)1
- Quality of corporate governance (Corporate Governance Assessment, or CGA)2
- Vulnerability to an abrupt loss of market access (Liquidity Risk Assessment, or LRA)
- Existence of material off-balance sheet risks (Off Balance Sheet Risk Assessment, or OBRA)
- Quality of risk management practices (Risk Management Assessment, or RMA)

Recent events have indeed demonstrated that high-profile credit defaults or severe credit deteriorations were often preceded by instances of poor financial reporting, weak governance practices, inadequate risk or liquidity management, or abusive uses of off-balance sheet structures.

As a separate analytical product, the RMA has two fundamental differences from the other EAI assessments:

- RMAs are by nature much more closely aligned with the fundamental rating process, and some of the high-level risk assessments they will present are already part of rating decisions
- The universe of firms covered by the risk assessments will be much narrower than those by the CGA or FRA, as we intend to focus on:
  - firms that have major capital market-type risks embedded in their core processes, and
  - firms with risk management practices that could have a significant impact on the overall stability of the financial systems of their home markets.

Consequently, the risk management assessment process might have less broad-based visibility than the previously published FRAs and CGAs have had. However, for the industries and firms at the center of the RMA effort, the impact on Moody's rating framework will be very significant.

Together with Financial Reporting Assessments, we hope that the RMA reports will help companies better understand how they can improve their risk management disclosures for the benefit of their creditors and thereby that they will promote transparency in the capital markets.

Background

Since the beginning of the 1990's, there have been a significant number of well publicized events or debacles with high-severity financial impacts, highlighting a variety of failures in the risk management process. Events ranged from pure market, credit or operational losses to combinations of different types of risks such as unauthorized trading and unfavorable market moves, or market losses and liquidity issues.

The last 10 years have seen an accelerated pace of financial innovation with increasing complexity and coverage of contracts and structures. It is now possible to create or hedge an exposure to virtually any single underlying financial and economic risk factor or combination thereof (e.g. interest rates, equities, FX, commodities, credit, weather, even macro-economic events). In many cases, risk objectives can be achieved using a variety of tools such as derivatives, highly structured products, or alternative risk transfer insurance solutions.

In theory, financial innovation leads to a more efficient allocation of resources in the economic system. Non-financial firms use financial products to protect their core franchises from the impact of volatile financial factors. When using the products to manage risks, financial institutions facilitate risk transfers, reduce concentrations, enhance liquidity and facilitate capital formation through intermediation. Proprietary traders such as hedge funds use the products to increase returns through leveraged positions or by arbitraging away market inefficiencies.

However, the rapid growth of financial products combined with the increasing linkages between financial markets has the potential to create destabilizing effects. This is particularly the case if the infrastructure of the capital markets does not provide sufficient boundaries and controls.

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2. "U.S. and Canadian Corporate Governance Assessment", Rating Methodology, August 2003
As a response to financial innovations:

- **Regulators** (BIS, Federal Reserve, SEC, FSA,...) have modified their regulatory capital frameworks for the overall stability of the financial systems and have issued new guidelines for the surveillance of newly emerging risks (i.e. interagency statement on structured transactions in the US).

- **Accounting** bodies such as FASB and IASB have promulgated new accounting rules intended to provide better visibility of the impact of financial products on balance sheet, earnings and cash-flows (e.g. FAS133, IAS 32, IAS 39).

In the end, though, the **risk management practices of firms form the first line of defense** against the potentially devastating impacts of these financial risks.

**Fixed income investors** are concerned about unexpected events that could impair the value of their holdings by significantly damaging core earnings capacity, increasing earnings or cash-flow volatility, reducing capital, or threatening business reputation or viability. Arguably, **rigorous risk management practices** enable management to choose a risk profile compatible with the firm's overall financial objectives and the credit rating it wishes to maintain.

**Risk control practices and risk measurement** techniques have made major progress in recent years. Market risk has seen a tremendous amount of convergence around the concept of Value-at-Risk (VaR), while portfolio credit risk measurement has come of age through the competing methodologies based on structural, reduced form, or hybrid approaches. Although in the initial stages of development, operational risk metrics are quickly gaining speed thanks to the Basel II accord. These impressive advances in measurement have helped fuel more financial innovations.

**Active management and mitigation of credit risks** have contributed to limit the impact of the turbulences of 2001-2003 on banks' balance sheets and earnings. The atomization of credit exposures among numerous players, through securitization, syndication and credit risk hedging, has helped to lower the concentration risk of many financial institutions.

Paradoxically, however, the advances in active management of risks have also created a new set of challenges for financial and non-financial firms alike:

- Beyond its benefits, the atomization of credit risk has created new issues such as increased opacity in risk retention through residual tranches of securitizations and the transfer of risks to less sophisticated players. In addition, these risk transfers may make it more difficult to find quick work-out solutions for non-performing credit given the lack of players with major stakes in the outcome.

- Deal pricing has become aggressive in many areas, with traders pricing in the (supposed) diversification benefits of the new trade.

- There are increasingly major challenges in building information systems that can aggregate positions and exposures in a consistent fashion across all the businesses of a firm, in particular if risks have to be matched with P/L reporting for risk-adjusted profitability measurement.

- The complexity of some of the new structures makes it impossible to decompose the risks across the traditional neat boundaries of market, credit, liquidity and operational risks.

- This same complexity requires an ever increasing level of sophistication in the people measuring and monitoring these risks. However, given the information intensity required for these jobs, risk managers tend to become more and more specialized. This dynamic might result in a lack of competent people to take a holistic view of risks.

- Advances in quantitative techniques can create a false sense of comfort derived from the apparent rigor of the models. Examples would include an extension of an existing model to new products for which it is not suited. Alternatively, the model might be theoretically correct but the assumptions used in it are flawed. In both cases, the failure from the misuse of the model can lead to very unreliable hedging positions and even results that go against original intuition. In extreme cases, the uncertainty from the model could dwarf the risk from the market factors.

In addition, **progress in risk measurement and control** has been far from uniform across industries and can show significant variations from firm to firm within the same industry.

Differences in risk management philosophy and execution are instrumental in determining prospects for a firm’s long-term survival and prosperity. Moody’s current rating methodology implicitly incorporates our overall assessment of firms’ risks at a high level. The RMAs will clearly articulate the key factors and conclusions considered in our analysis.
**Targets of Risk Management Assessments**

The key targets of the RMA process are large global financial institutions and large corporates with significant economic exposures to financial, commodity or energy risk.

While the overall thought process for these assessments is the same for all industries, each particular analysis will address the issues specific to its industry and in a manner that uses the risk language and measures of that industry. For non-financial firms the emphasis will be on risks to earnings and cash-flows only, while for financial institutions the analysis will incorporate earnings, cash-flows, and market value of the balance sheet. Similarly, geography will also alter the weight we give some issues in our analysis.

Moody's goal for the 2004–2005 period is to report on the four major segments of the financial industry, a priority based on the perceived large exposure of these segments to financial and operational risks:

- Global broker-dealers and securities firms
- Large international universal banks
- Specialized financial institutions, such as finance companies and the Government Sponsored Enterprises (GSE) in the USA.
- Global insurers/reinsurers

Within these segments we anticipate publishing on roughly 40 companies worldwide in 2004-2005, whether as RMA reports or as distinct sections in the annual credit reviews.

In the world of non-financial corporates we will, in time, focus on those companies with strategic risks tied to the financial markets such as a large exposure to commodities (metals, oil, gas and energy, grain and livestock) or high dependence on financial risk strategies such as FX hedging of international operations or liabilities management through interest rate swaps. Other non-financial issuers will be addressed in a later implementation.

**Scope of Risk Management Assessments**

At its core, the RMA will attempt to assess the relationship between the firm’s risk appetite and its risk control capacity. Moody’s ratings reflect opinions on the relative creditworthiness of issuers with a degree of stability over economic cycles. In order for an issuer to maintain its rating over time, its risk appetite should be related to the maximum amount of risk from all sources that it can adequately support even in severe market conditions without the livelihood of the firm being threatened.

Our approach will emphasize a holistic review of risk philosophy and practices in the context of the everyday operations of the firm. We will not be assessing the firm solely in the traditional discrete categories such as market risk, credit risk, liquidity risk, and operational risk. While most financial risks (and some operational risks) have readily available prices in the financial markets, providing a benchmark to how efficiently firms use their risk capacity, other types of risk (indeed most operational risks) do not and are considered part of the cost of doing business. In practice, scenarios mixing different categories of risk such as a combination of market moves and operational inefficiencies have led to large unexpected losses: (e.g. traders trying to hide previous losses by putting on more bad trades. Examples include FX unauthorized trades at Allfirst – a subsidiary of Allied Irish Bank – leading to a USD 700 million loss in 2002, or, more recently, the unauthorized trades at National Australia Bank (NAB) with a loss of AUD 360 million).

The analysis will encompass both risk and uncertainty exposures and our conclusions will distinguish between the two where possible. Risk refers to those outcomes that can be linked to a well defined generating process and to which we can attach a probability distribution (based on historical frequencies, estimated through a model, or even subjectively assigned). A typical example is market risk. Once positions are known, exposures to the key market factors can be modeled. From the model of the future distribution of the market factors, one can then quantify the risk of the position using a metric such as Value-at-Risk (VaR). Uncertainty, on the other hand, results from heterogeneous events with no clearly identified ex-ante generating mechanism; hence it is difficult to classify and carries no estimable distribution of outcomes. Legal issues are an example of uncertainty. A firm does not know prior to it happening when and where the next legal event will occur. This unpredictability has been clearly highlighted over the past few years in the banking/securities industry with a string of unrelated events leading to large actual or potential losses: Enron and Worldcom litigation, the NYAG research settlement, the mutual funds scandal, and the Parmalat fraud.

Finally, we also intend to highlight the specific issues created by various hybrid classes of risk and uncertainty such as:

- Risks which can arise from inappropriate use of models
- Combination of risks arising from complex transactions structured for third parties
- Combination of risks arising from relationships with hedge funds
RMA Analytical Framework

The ultimate objective of a firm's risk management organization should be to make sure that no major surprises put
the firm in peril. Based on the principle that only what is measured can be managed, we will primarily be assessing
whether the organization is able to answer the following questions at all times:

• Does the firm's senior management level know how much it is prepared to lose from all sources of risk over a
given horizon (often a reporting period but over shorter horizons, too) to achieve its overall long-term financial
objectives?

• Does the firm's senior management level know where the top exposures are (both in terms of measured risks
and non-measured uncertainties)?

• Is there an adequate understanding of the profile and mitigation of the potential losses from the top exposures?

Moody's aims to look at the rigor of the risk management process, the buy-in of management, the appropri-
ateness of measures given the business mix and at issues of technical competence. To understand the robustness
of the firm's answers, our analysis will be articulated around the four key domains of a risk framework. These are:

• Risk governance
  - Involvement of directors (including external / non-executive) in reviewing risk appetites and control
effectiveness, directors' awareness of risks, relevance of their backgrounds to assess risks
  - Collective and individual responsibilities of and awareness by executive management on risk matters,
integration of risk considerations in budgeting, capital allocation, and determination of capital adequacy
  - Organization, staffing, resources, veto powers and enterprise-wide role of risk management function(s)

• Risk management
  - Risk control processes – mandates of units controlling market credit and operational risk, extent of
separation of reporting lines of operating level risk, front line and support functions, trade reconciliations,
practices to ensure limit discipline
  - Risk appetite, limit setting, relationship of risk appetite to earnings, capital, business decisions, portfolio mix
and diversification
  - Risk mitigation (including hedging policies)

• Risk analysis and quantification
  - Quantification, measures used for limit setting and running the business, stress testing, capital
determination
  - Monitoring and reporting – rigor, appropriateness and usefulness of reports and alert systems

• Risk infrastructure and intelligence
  - Risk infrastructure - information and knowledge systems
  - Risk intelligence – validity of models and data used

(More details are provided in the appendix)

On the quantitative side, given the uniqueness of the events putting firms in peril, we emphasize the use of a vari-
ety of measures instead of excessive reliance on standardized metrics such as Value-at-Risk (VaR) for market risk,
for example. There is no one metric that is adaptable to all types of risk evaluation. For example, while VaR is a good
indicator of the potential losses of traded liquid products over a short-term horizon, it is not designed to capture the
stress-losses for illiquid products necessary to calculate economic capital.
RMA Process

The preparatory start point for the RMA process is the application of a standardized approach (see examples of topics in appendix) using a firm’s existing disclosures on the topics of risk:

- Annual reports and public filings
- Moody’s existing institutional knowledge

This initial stage will likely be the most important and time-consuming part of the whole process. For example, Moody’s expects to address credit risk issues using existing practices but, as explained in the previous sections, it may fold its risk management assessment into the overall rating (especially outside North America).

The aim is to complete the standardized work-plan (that is, the assessment road-map) to the extent possible before presenting issuers with Moody’s preliminary findings; our presentation will highlight the gaps in Moody’s collective knowledge. Risk management is a continuous process, and point-in-time disclosures by themselves do not provide investors with enough value-added information to achieve an in-depth understanding of the robustness of this process.

The next stage will vary by firm depending on the depth of Moody’s knowledge of the institution and the complexity of the firm’s activities. Typically, the Moody’s risk management specialist along with analysts for that name would seek to interview the Chief Risk Officer and/or the CFO along with the owners of the key risk processes of the firm. If necessary, other risk or business representatives would be interviewed if possible to gain a clearer picture of specific risk issues.

After the issuer comment phase, the final RMA report (or RMA input into the regular credit report) will therefore present the conclusions Moody’s has reached after taking into account both internal and public sources of information. Updates to the initial assessment should be less resource intensive unless a major event or some key changes have occurred since the initial assessment.

RMA Reports

Moody’s risk management assessments will result in three types of reports:

- **Industry RMA** will investigate the overall quality of risk processes for the key companies within a global industry
- **Individual firm RMA** will comment on the quality of a specific company’s risk management
- **Special Comments** will present Moody’s views on specific risk issues such as: development of economic capital methodologies, emerging best practices in operational risk, etc.

The RMA process will also provide input for our general credit reports on issuers, typically in the form of a distinct sections in these publications.

Publication of RMAs will require a 2-step process:

**Initial** individual firm data will be gathered on the largest global participants in an industry, assessing the appropriateness of each firm’s risk management approach and controls, observations of their corporate culture, with balanced comments highlighting both strengths and weaknesses. This information will be used to publish the industry RMA. Industry RMA reports will:

- Identify the key themes in risk management for this industry
- Comment on specific risk management challenges common to firms in the industry
- Explain benchmarks against which individual companies in that segment will be evaluated
- Highlight best practice ideas for potential improvement particularly in the area of disclosure

Individual firm RMAs will then be published against the industry benchmark and will aim to differentiate firms’ risk management practices according to a number of key criteria

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3. Moody’s will use its standard safeguards regarding non-public information. Confidential non-public information is used only for the purpose of expressing an informed opinion on the firm’s quality of risk management. As usual, Moody’s will not, without the agreement of the issuer, disclose the information in any public communication or research report.
Sequentially the following cycle is foreseen, which highlights the iterative and continuous nature of the dialog and analysis which we intend to have:

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<tr>
<th>Initial Individual Firm Data Gathering</th>
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<tr>
<td>Non-benchmarked assessment of strengths and weaknesses, control culture appropriateness of controls and risk management practices</td>
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<td>Initial data Firm A</td>
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<th>Industry RMA</th>
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<td>Identification of key themes, challenges and best practices, basis for benchmarking</td>
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<th>Benchmarked Individual Firm RMAs</th>
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<td>Broader universe of firms: A-Z</td>
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We plan to update industry RMA reports as needed, based on major shifts in risk management practices, while company RMAs will be updated on an annual basis. RMA reports will be accessible via Moody's online subscription service at www.moodys.com.

The specific RMA reports will not represent an assessment of compliance with regulatory or accounting rules, rather they estimate the capacity of a firm to manage and communicate its risks in relation to its creditworthiness. We intend to structure the individual firm RMA reports so as to provide maximum transparency benefit to investors.

### Regional Variations in the Analytical Framework and Approach

The approach for European banks will more strongly emphasize measures to implement Basel II / EU CAD 3, operational risk management, and the links to corporate governance. This is because of the:

- Higher likelihood of widespread statutory adoption of the new capital adequacy accord in Europe and of related regulatory guidelines for credit and operational risk management
- Need for separate consideration of risk governance in Europe – for the North-American issuers this would already be covered by Moody's Corporate Governance Assessments.

An important point here relates to the *overlay or add-on role of the RMA process in evaluating the effectiveness of credit risk control processes*. After the credit deterioration problems of the late 1980's and early 1990's the larger North-American institutions adopted broadly similar processes. These have included, for example:

- Regular high level reviews of enterprise-wide portfolios of credit risk by sector, geography, rating class and concentration clusters
- Limit setting procedures involving credit committees with veto-powers from non-customer-facing functions
- The internal rating and assessment of counterparties and proposed transactions by persons with reporting lines separate to those in customer-facing functions
- Monitoring and reporting which can integrate the enterprise-wide exposures to a single counterparty or to related groups of counterparties and identify credit risk concentrations.
Neither the uniform adoption of such practices, nor a standardized adoption of the Basel "Principles for the Management of Credit Risk" as guidelines by national regulators is yet certain in Europe. Moody's therefore sees a role for the RMA process in systematically assessing the credit risk control and portfolio review processes. Typically this would draw heavily on the accumulated knowledge of the fundamental analysts at Moody's.

The analysis in the Asian and emerging markets will incorporate the following market characteristics:

- Emerging market financial institutions very often may not engage in the complex trading activities that we most often think of as requiring superior risk management. However financial firms in these regions are often exposed to more risks resulting from structural or institutional peculiarities such as:
  - Weaker legal, accounting, audit and regulatory infrastructure
  - Often poor corporate governance
  - More volatile and illiquid security and asset markets.

- Basel II is not as close to implementation in these markets as in the European Union. However, with almost all rated banks working on some form of implementation, it provides a common base for credit risk discussions even in developing markets. As with Europe, credit risk management will be a key focus, and a large part of the analysis is already being done in the existing fundamental rating framework. However, we feel that given the high levels of market and operational risk inherent in emerging markets, RMAs for issuers in these regions will be beneficial to investors.
APPENDIX: Key Topics of Detailed RMA Approach

(Note: Some items in the table are only applicable to financial institutions)

RISK GOVERNANCE

1. Risk Governance at Board Level
   • Extent to which board (including external or independent directors) is involved in defining risk appetite, control structure and organization
   • Awareness and understanding by board of risk exposures
   • Mandate and practical workings of board-level risk and/or audit committees in reviewing risk management and effectiveness of controls

2. Risk Governance at Executive Management Level
   • Involvement in risk decisions by executive committee, risk-awareness of top management
   • Mandate and practical workings of executive level risk committees
   • Risk measures and considerations used by executive management in determining capital allocation and overall capital adequacy decisions

   • Reporting lines and authority of risk management functions
   • Mission of risk control: monitoring/measuring/reporting vs. active management and mitigation
   • Independence/autonomy of risk organization
   • Centralized vs. decentralized risk organization, integrated vs. silo risk control, extent of adoption of enterprise-wide risk management concepts
   • Existence and implementation of enterprise-wide risk management concepts
   • Veto power and forcefulness of risk control/management on new and existing products
   • New product approval procedures
   • Process for the dissemination of risk principles, preferences, risk-taking decision authorities, policies and procedures
   • Steps taken to provide education and training for broader personnel in risk matters

RISK MANAGEMENT

4. Risk Control Processes
   • Mandates, authorities and responsibilities of market, credit and operational risk management units, extent to which these are enterprise-wide
   • Extent of function separation in the running of risk-taking units, and how reporting lines of “customer facing”, “trading” or “lending” business lines differ from risk and financial control reporting lines
   • Practical interaction of market, credit and operational risk management with risk-taking “front line” as well as with other control/support units
   • Practical measures to ensure adherence to limits
   • Systematic processes in place for reconciliation with internal and counterparty books and records
   • Role of internal audit in process vetting and testing of effectiveness of controls

5. Risk Appetite and Limit Setting
   • Magnitude of risk appetite, its relationship to financial performance, budgets and capital levels
   • Impact of risk appetite on business decision making including portfolio positioning and diversification
   • Translation of risk appetite to granular limits - hierarchy of market and credit risk decision authorities
6. Risk Mitigation
• Principles for hedging longer-dated market and credit exposures (dynamic vs. matched maturity)
• Management and work-out practices for impaired/distressed positions
• Contingency plans for market stress events
• Operational risk mitigation (insurance, BCP)
• Collateral management/margining practices

RISK ANALYSIS AND QUANTIFICATION

7. Risk Quantification
• Measures for limit setting and for running the business
• Use and specifications of statistical methodologies such as VaR, PD, LGD, UL, etc
• Use of scenarios for market, ALM, liquidity and credit risk stress testing
• Economic capital determination
• Operational risk quantification

8. Risk Monitoring and Reporting
• Frequency, granularity, aggregation of market and credit risk reporting, drill-down and concentration identification abilities
• Scope of capture of market and credit risk reporting (integration of tradable, derivative and market counterparty linked exposures in credit risk reporting, non-trading books in market risk reporting)
• Dissemination of risk reports to various management levels
• Regulatory reporting
• Enterprise-wide standards applied in identification of impaired and distressed positions
• Identification of significant operational risks – reporting on realized high intensity / low frequency and low intensity / high frequency events as well as potential high intensity events

RISK INFRASTRUCTURE AND INTELLIGENCE

9. Risk Infrastructure
• Extent of enterprise-wide integration of systems, number of different platforms in use for market and credit risks
• Capacity and suitability of systems for meeting requirements of Basel II / FAS133 / IAS 32 / IAS 39
• Platforms for operational risk, extent of integration of loss event recording with control self risk assessment, key risk indicators
• Key systems investment requirements for meeting risk management challenges

10. Risk Intelligence
• Quality control, back-testing and assessment of risk control model assumptions
• Quality control on models used by front offices
• Role of internal and external audit in testing risk control and front office models
• Organization of data processes and key improvement requirements for meeting data quality challenges for risk
Related Research

Research Methodologies:
Financial Reporting Assessments, December 2003 (80224)
U.S. and Canadian Corporate Governance Assessment, August 2003 (78666)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.