

THE OLIVER WYMAN

# RISK JOURNAL

PERSPECTIVES ON THE RISKS THAT WILL  
DETERMINE YOUR COMPANY'S FUTURE

# INTRODUCTION

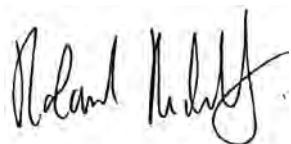
The ability to see around corners is now one of the most important skills a leader can have, at a time when complex risks are driving the transformation of companies' business models and reshaping entire industries. A few years ago, the world was shocked when large banks turned to governments for bailouts. Now, governments themselves are lining up for help. Slow-moving risks that developed over decades—environmental, demographic, and long-term economic trends—are exploding into crises. At the same time, the unthinkable is starting to look inevitable.

More and more, the capability to anticipate and analyze the impact of interconnected risks is determining whether companies will succeed or fail—be they in the financial, energy, or health and life sciences sector. With this in mind, we are pleased to share our second edition of *The Oliver Wyman Risk Journal*. This publication is a collection of perspectives on the risks that we believe will determine companies' futures and reflects our firm's deep commitment to risk management. Oliver Wyman's Global Risk & Trading and Financial Services practices have produced this journal with contributions from other parts of the organization such as the Oliver Wyman Global Risk Center, which has partnerships with top professional organizations to research risk issues that involve multiple industries and countries.

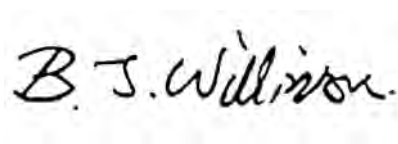
Our journal opens with a discussion of how emerging risks are developing into pressing threats. We then examine how companies urgently need to improve their risk discipline by first clearly defining their risk appetites and then integrating risk management into their financial and strategic decisions across their organizations. This is crucial when companies consider large investment projects, which are often plagued by cost overruns and delays.

Next, we explore the impact of recent events that are rewriting the rules for financial firms and for many other companies. The rise of sovereign risk. Scarce financial resources. These developments are altering how businesses can prosper, while creating a critical need for more risk-aware cultures. They are even driving paradigm shifts in areas such as commodity trading and in the approaches used to assess the capital adequacy of financial firms.

In each article, our authors offer practical advice for how companies can cope with risks that are redefining businesses. Our goal is to inform and to provoke a reexamination of how your organization conducts risk-adjusted decision making. We hope you enjoy reading these perspectives and that this publication sparks interesting debate around these themes.



**Roland Rechtsteiner**  
Head of Global Risk & Trading Practice



**Barrie Wilkinson**  
Head of Capital Markets Risk Management



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# GRAPPLING WITH SLOW-MOVING RISKS

# COLLIDING FISCAL AND DEMOGRAPHIC TRENDS COULD LEAD TO MORE ECONOMIC INSTABILITY AND SOCIAL UNREST OVER THE NEXT DECADE

JOHN DRZIK

When the public and many risk managers think of risk, they tend to focus on fast-moving threats—such as financial market crashes, pandemics, and political upheaval. But there are slow-moving risks as well: threats that develop over time before suddenly emerging as catastrophes—when it is too late to act. Most environmental risks are slow-moving. So are many risks posed by new technology.

One of the most troubling of these threats is the one we discussed this year at the launch of the World Economic Forum's Global Risks 2012 report: A confluence of adverse fiscal and demographic trends have already begun to create vulnerabilities in many countries and promise to create more over the next decade and beyond. (See Exhibit 2 on pages 8 and 9.)

Throughout the world, governments are running up excessive—and increasing—levels of sovereign debt. Populations are aging as birth rates fall in the developed world and longevity increases everywhere. Healthcare costs are rising. At the same time, long-term investment is falling, weakening economic growth.

Taken together, these trends will create a growing expectations gap, as retirement security and affordable, accessible healthcare become harder and harder to attain. Without a change in course, these trends and the resulting unmet expectations, can create both economic instability and significant social unrest, leading to everything from protests to riots to the full collapse of political and economic regimes.

Take retirement security. Improvements in healthcare have extended life spans. It's great that we are living longer. But the progress in extending longevity means people are living many more years beyond the age at which they expect to retire. Decreasing birth rates in developed countries mean there are now fewer working people to support growing retiree populations. By 2025, 100 working people in developed countries will need to provide enough income to support nearly 36 people older than 65. (See Exhibit 1.) Fifty years ago, incomes from the same number of working age people would have supported only 15 people older than 65.

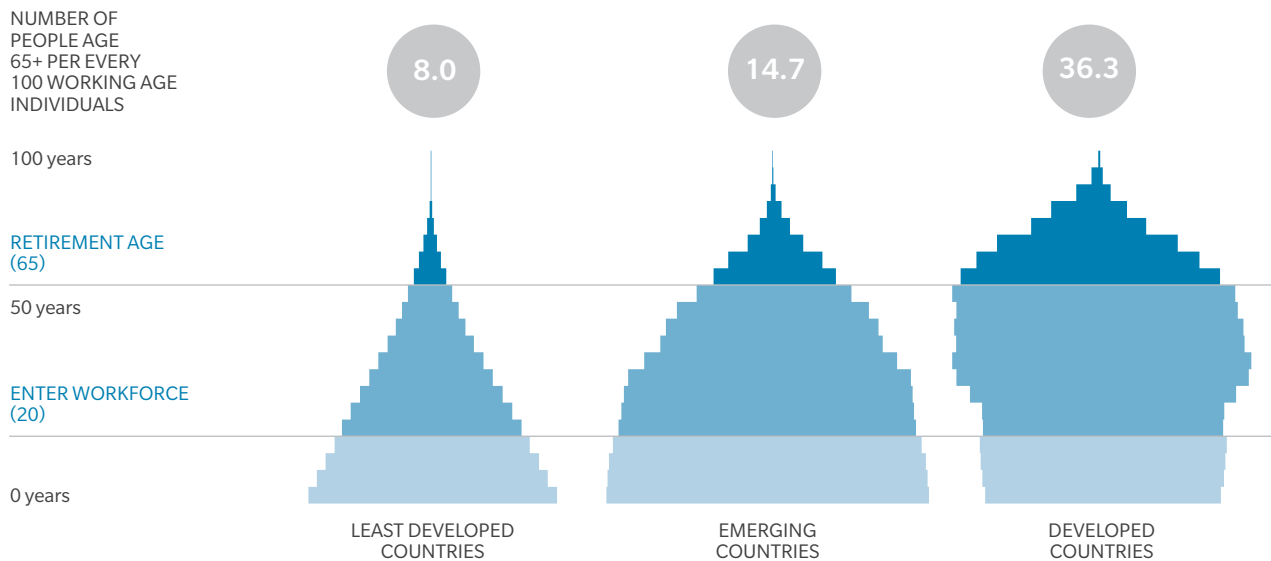
This trend is only getting worse, and becoming more global. Countries which already have a mountain of debt don't have the option to borrow their way out of the problem. The household sector is also heavily in debt, and few people have saved enough for retirement. Employers in some countries have been slowly shifting the financial risks of retirement to individuals by moving away from defined benefit pensions. The numbers simply don't add up, and something will have to give.

In healthcare, spending is growing much faster than most developed countries' gross domestic products. Aging populations will continue to push healthcare costs up higher. At the same time, employers in some countries, like the United States, are cutting back on the healthcare benefits they offer to employees and shifting the risk of the growing healthcare costs to individuals. As governments struggle with their financial positions, they too may try to shift more of the burden to individuals. Absent a change to these trends, many will be disappointed by the care they can afford.

At the same time, a growing shortage of long-term funding is developing. Many people have lost their trust in financial institutions and have shifted toward short-term savings products. This reduction in long-term funding for financial institutions makes it harder for them to provide financing for infrastructure and other longer-term investments. It also threatens to harm economic growth and productivity. If a lack of long-term funding continues, we estimate the annual incomes of the next generation of Westerners could be on the order of \$15,000 less than



EXHIBIT 1: POPULATION DEMOGRAPHICS IN 2025



Source: Data from *World Population Prospects: 2010 Revision*. New York: United Nations Department of Economic and Social Affairs, 2010, World Economic Forum

they otherwise would be in 2030. This will only make it harder to deal with the retirement and healthcare issues mentioned above.

The impact of these trends as they collide could be daunting. But they will only threaten our prosperity and stability if we fail to take action to mitigate the risks now.

Political leaders need to take steps to adjust expectations and shift policies accordingly. For example, the numbers around retirement start to add up better if retirement ages are increased or benefits are decreased. Given current political dynamics in most countries, though, it will take considerable skill for leaders to achieve this type of outcome. Political leaders should also prioritize steps which will help restore trust in financial institutions, as their health is critical to economic growth.

Businesses should focus on innovations that respond to needs that may emerge as these trends progress. As the global population ages, and financial risk is shifted to individuals, consumer demand will only grow for secure retirement solutions and affordable healthcare services.

Forward-looking companies have already begun to innovate. Some healthcare providers in the United States, for example, have developed “value-based care” programs that pay doctors and hospitals based on outcomes rather than procedures. This approach has already allowed some providers to reduce cost while increasing the quality of care.

Many more similar actions are urgently needed on a global scale. With the right actions, public and private sector leaders could make a real difference to billions of people. Without them, we will slowly move into an increasingly dangerous zone where unmet expectations on a large scale will make us vulnerable to an array of possible risks.

The time to act is now.

.....  
**John Drzik** is the CEO of Oliver Wyman Group  
 .....





## HEALTHCARE, HEAL THYSELF SELECTING THE RIGHT PATH FOR REFORM

MIKE WEISSEL

It isn't easy to set important social institutions on a new footing without setting off a cascade of undesirable results. Take healthcare in the United States, for example. At the moment, it looks unsustainable. Costs have been rising faster than inflation for decades with no end in sight, and payers, especially government and employers, which account for 45 percent and 21 percent of healthcare spending, are nearing the end of their ability to pay. In a recent survey by Oliver Wyman's Health & Life Sciences practice, more than half of employers said they couldn't continue to pay for health insurance for their employees even if medical inflation was cut by five percentage points—though they wanted to.

Some obvious steps can be taken to control costs and improve the quality of care. But most of them entail their own risks. Prevention, early treatment, and health management can help keep patients out of hospitals and emergency rooms. But too aggressive a transition to a new model could damage some facilities financially. New team-based and data-driven care models can improve the effectiveness and efficiency of care. But they call for training and skills that are not yet sufficiently available. Patient accountability can help introduce financial discipline into the system—or it might lead to massive resistance.

There are many great ideas out there on how to fix healthcare. But we need to do things the right way, in the right order, and with the right timing.

.....  
**Mike Weissel** is the managing partner of the Health & Life Sciences Practice  
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### EXHIBIT 2: GLOBAL RISKS LANDSCAPE 2012

#### THE POTENTIAL IMPACT AND LIKELIHOOD OF GLOBAL RISKS OVER THE NEXT TEN YEARS

For the Global Risks 2012 report (published by the World Economic Forum in collaboration with a group of four partner organizations, including Oliver Wyman), 469 respondents were asked to gauge the likelihood and potential impact of 50 risks on a scale of one to five. These pages summarize the results.

On the left, the full gamut of risks. Note that respondents think chronic fiscal imbalances and severe income disparity stand out from the crowd. On the opposite page, the same risks grouped by category.



GLOBAL RISKS BY CATEGORY



Source: Global Risks 2012: Seventh Edition, World Economic Forum and partners including Oliver Wyman







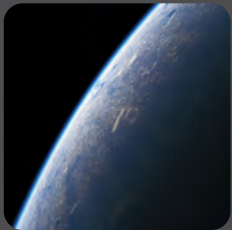







# GETTING AHEAD OF EMERGING RISKS A NEW FRAMEWORK

THE INTERNATIONAL RISK GOVERNANCE COUNCIL, WHOSE RESEARCH IS SUPPORTED BY OLIVER WYMAN'S GLOBAL RISK CENTER

Global disruptions caused by emerging risks in the past decade include events as diverse as the 2003 SARS outbreak, the 2004 tsunami in the Indian Ocean, tainted food imports, the 2008 financial crisis, volcanic eruptions in Iceland, wildfires in Russia, Japan's earthquake and tsunami, as well as recent Arab Spring events.

Often executives will not allocate substantial resources to identifying and assessing emerging risks because they are seemingly random and unpredictable. This is a mistake. A more careful examination reveals that companies can get ahead of emerging risks if they pay closer attention to their common drivers.

To assist with this challenge, we recommend that executives consider the following framework of **12 common contributing factors** to emerging risks when making strategic decisions.

|   |   |  |  |  |
|---|---|--|--|--|
|  <p><b>1 SCIENTIFIC UNKNOWNNS</b></p> <p>Scientific unknowns contribute to risks being unanticipated, unnoticed, and over- or under-estimated.</p>   | <p><b>2 LOSS OF SAFETY MARGINS</b></p> <p>The level of connectivity in many of today's social and technical systems is greater than in the past. Many systems are operating under higher levels of stress as their interconnections and their pace are increasing.</p>  |  <p><b>4 VARYING SUSCEPTIBILITY TO RISK</b></p> <p>The consequences of an emerging risk may be different from one population to another, creating varying susceptibilities to risk.</p>   | <p><b>6 SOCIAL DYNAMICS</b></p> <p>Social change can lead to potential harm. It is therefore important for risk managers to identify, analyze, and understand changing social dynamics.</p>  | <p><b>7 TECHNOLOGICAL ADVANCES</b></p> <p>Risks may emerge when technological change is not accompanied by appropriate prior scientific investigations or post-release surveillance of the resulting public health, economic, ecological, and societal impacts.</p>  |
|  <p><b>3 POSITIVE FEEDBACK</b></p> <p>Positive feedback can augment a change and tends to be destabilizing. It can thus increase the likelihood or consequences of an emerging risk.</p>   | <p><b>5 CONFLICTS ABOUT INTERESTS, VALUES, AND SCIENCE</b></p> <p>Risks may be amplified when efforts to assess and mitigate them encounter opposition on the grounds of contested science or incompatible values.</p>    | <p><b>9 COMMUNICATION</b></p> <p>Risks may be complicated or amplified by untimely, incomplete, misleading, or absent communication. Effective communication that is open and frank can lead to better anticipation and management of emerging risks.</p>          | <p><b>8 TEMPORAL COMPLICATIONS</b></p> <p>A risk that takes a long time to develop may be difficult to detect until its adverse effects are evident.</p>   |   |
|  <p><b>12 MALICIOUS MOTIVES AND ACTS</b></p> <p>Malicious motives give rise to emerging risks. Practitioners need to consider intentional as well as unintentional causes of risk. In a highly interconnected world, they can have much broader-reaching effects than in the past.</p> |  <p><b>11 PERVERSE INCENTIVES</b></p> <p>Perverse incentives are those that induce counterproductive or undesirable behavior, leading to negative, unintended consequences.</p>  |  <p><b>10 INFORMATION ASYMMETRIES</b></p> <p>Information asymmetries occur when some stakeholders hold key information about a risk that is not available to others. It can be the source of risk by creating mistrust and fostering non-cooperative behaviors.</p> |  |  |



# ENTERING A NEW AGE OF EARNINGS UNCERTAINTY

## MOST COMPANIES' SENIOR FINANCIAL EXECUTIVES EXPECT THE SAME, OR MORE, EARNINGS UNCERTAINTY IN THE NEXT FIVE YEARS

MICHAEL DENTON  
ALEX WITTENBERG

Is the global economy entering a new age of unpredictable earnings? The answer is a resounding yes. Most senior financial executives expect it will become more difficult to forecast the critical variables intrinsic in the execution of their corporate strategies. Against the backdrop of an already volatile business environment, a startling 93 percent believe their exposure to earnings uncertainty will climb or remain the same over the next five years, according to a recent survey by the Association for Financial Professionals (AFP), in collaboration with the Global Risk Center of the Oliver Wyman Group.

Based on the first of a series of annual risk management surveys of nearly 500 chief financial officers, corporate treasurers, and other senior executives, as well as subsequent interviews with respondents, our analysis suggests that financial professionals are grappling with a growing list of unfamiliar factors. Companies ranging from financial services firms to industrial manufacturers to commodity producers are experiencing greater volatility in both their revenues and expenses.

One-third (35 percent) of survey respondents, who anticipate increased earnings uncertainty, think that financial risks associated with credit, liquidity, interest rates, and currency/foreign exchange are the primary drivers. Yet significantly, many respondents point to other factors. One-quarter (25 percent) are most concerned about external risks, such as regulatory or country risk. Others are most focused on macroeconomic (19 percent) and operational (14 percent) risks, such as supply chain disruptions.

For example, as recently as six months ago, no one expected that a country might exit the Eurozone. Yet Greece has shown that withdrawal is not outside of the realm of possibility. In the United States, the struggle over the Affordable Care Act (ACA) shows just how long uncertainty can drag on. More than two years after being signed into law, the ACA was in limbo due to legal challenges. Even now that the law has been upheld by the Supreme Court, a substantial number of executives say they are still putting off action on healthcare until after the 2012 presidential election, waiting to see if a new administration might repeal or replace it.

This uncertainty is jeopardizing many once-solid business models. As input costs become less predictable over time and economic conditions become more volatile, companies face difficult decisions related to their long-term capital investments, their deployment of available cash, and the pricing of their products.

Risk-savvy financial executives are starting to recalibrate their businesses to manage this uncertainty better. Their hope is to increase both the financial and operational flexibility in their business so that they can nimbly seize opportunities for higher returns—the result of unprecedented shifts in their competitive landscapes.

For example, many executives are developing more dynamic supply chains. Retailers that used to stock their stores aggressively now prefer to hold less inventory and to chase additional supply only as the product sells out. Some companies are defensively shoring up their liquidity to prepare for any sudden payment delays or supply disruptions, as well as to pounce on market opportunities created by industry disruptions. Others are focusing on “owning” critical inputs that they had previously shed to third parties, to ensure supply and avoid disruption.

At the same time, executives are focused on improving the granularity of the forecasting within their business. Financial forecasts are becoming much more detailed and can accommodate many alternative versions of the future—varying known sources of volatility, exogenous events, market outlooks, and macroeconomic scenarios.

One senior financial executive at a multi-billion dollar company with operations in more than a dozen countries used to ask business units for cash flow forecasts on a quarterly basis. Now, he asks for them every month, and in some markets, every week. “We need to become more granular in our forecasts and budgets and to have more transparent reporting,” he says.

By improving visibility into operations, financial executives hope to avoid potential threats and to be better positioned to capitalize on market opportunities. For example, a global entertainment company that had previously compensated performers through more than 700 local bank accounts in over 41 countries rationalized its suppliers in order to lower transaction costs, to decrease the company’s counterparty risk to poorly-rated banks, and to understand its global cash position more quickly and clearly.

Companies are also encouraging a greater sensitivity to risks across their organizations. “It’s amazing to me how many people walk around deaf, dumb, and blind and want to remain that way when there is a risk of catastrophic failure,” one executive says. Financial executives know that culture must change.

To that end, some are championing monthly reviews of risks and assumptions. They are seeking out more perspectives—both internally and externally. They’re also elevating risk discussions to their company’s senior executives and board of directors. Financial executives are “shocking” their forward-looking financial statements and strategies, using stress testing. “We are examining what changes are significant enough and likely enough to factor in,” says one respondent.

Our research—detailed in the 2012 AFP Risk Survey—suggests that the list of risks that financial executives must manage will only continue to expand. While the sluggish US economic recovery, uncertainty in Europe, and a slowdown in China continue to preoccupy individuals and companies, those with the ability to manage and capitalize on the uncertainty of an ever-changing and often unfamiliar global landscape will outpace the growth of their peers—and may win a permanent victory.

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**Michael Denton** and **Alex Wittenberg** are partners in the Global Risk & Trading Practice

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# BY THE NUMBERS

Some numbers from the 2012 Association for Financial Professionals/Oliver Wyman Risk Survey that we find compelling

93%

expect the same, or more, **earnings uncertainty** in the next five years



57%

expect **supply chain disruptions** will have a significant impact on earnings



72%

are concerned about **financial risk**



50%

expect **energy prices** will impact their earnings



70%

expect **regulatory risks** will have a significant impact on earnings



30%

are cutting **capital expenditures**



35%

are reducing **staff**







# IMPROVING RISK DISCIPLINE IN DECISION MAKING

# MANAGING A COMPANY’S RISK APPETITE EFFECTIVELY CAN BE THE DIFFERENCE BETWEEN LONG-TERM SUCCESS AND FAILURE

MARK PELLERIN, CFA  
RICHARD SMITH-BINGHAM  
ALEX WITTENBERG

Cash has been growing by 15 percent a year on the balance sheets of many of the world’s largest corporations. Confronted by rising demands from rating agencies and investors, most aim to invest in initiatives that will improve their long-term positioning without negatively affecting short-term earnings.

Developing a winning strategy is difficult in the best of times. In the uncertain economic times that we are now

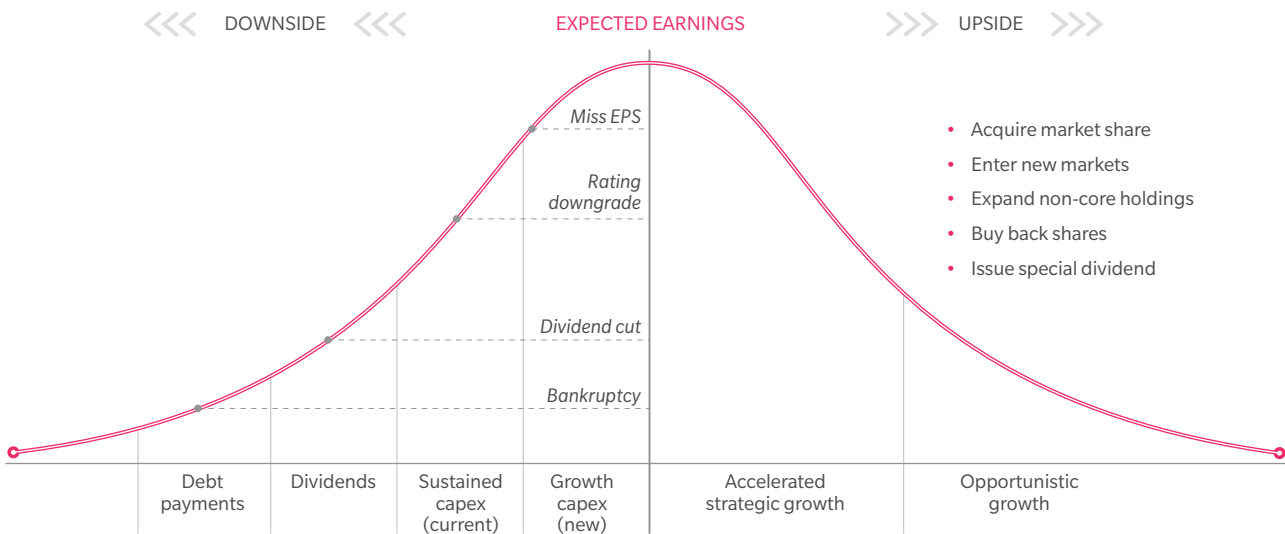
experiencing, it is more difficult than ever for companies to determine which risks are worth taking. The first step in developing this capability is to define the company’s appetite for risk—the point where its willingness to take a risk and its ability to do so are balanced.

Too many companies rely on an intuitive sense of risk appetite, based on an assumed consensus across key stakeholders. Or they focus on a limited range of metrics that do not reflect the firm’s full risk base and potential performance volatility. Indeed, nearly 70 percent of board members say their companies have not properly defined their risk appetite, according to the National Association of Corporate Directors, whose research is supported by Oliver Wyman’s Global Risk Center.

When a leadership team fails to align these considerations, the results can be catastrophic—especially in volatile economic conditions. (See Exhibit 1.) One major industrial company announced an acquisition, only to discover later that the transaction’s financial obligations had jeopardized its ability to meet two key financial goals: paying an annual dividend to shareholders and maintaining an investment-grade credit rating.

## EXHIBIT 1: EVALUATING THE POTENTIAL UPSIDE, AND DOWNSIDE, OF RISK TAKING

ANALYZING A COMPANY’S TOLERANCES MAKES IT POSSIBLE TO DETERMINE WHICH RISKS ARE AFFORDABLE



Source: Oliver Wyman





## A FOUNDATION FOR OUTPERFORMING COMPETITORS

Specifying a company's risk appetite can help it to outperform competitors by supporting the efficient and flexible allocation of capital. A risk appetite statement does not prescribe a course of action. Its value lies in its ability to sharpen C-suite discussions and to distribute the financial resources of the firm more effectively. It provides executives with a road map for evaluating different potential strategic paths using a shared understanding of the overall boundaries. (See Exhibit 2.)

This shared understanding helps senior management to evaluate and balance the trade-offs between maximizing short-term profits and positioning the company for long-term success. In some cases, this can embolden executives to be more aggressive. In others, it can lead them to be more cautious. In addition, a clear top-down articulation of a company's appetite for risk can strengthen the risk management culture throughout the organization.

The discipline of specifying an appetite for risk empowers business leaders to make more informed and nimble decisions. These may be focused on one of three different objectives: ensuring a company's financial stability by de-risking the business, pursuing growth opportunities

### EXHIBIT 2: PRACTICAL QUESTIONS FOR IDENTIFYING A COMPANY'S RISK APPETITE

A GOOD RISK APPETITE STATEMENT SHOULD ADDRESS C-SUITE LEVEL QUESTIONS THAT ARE OFTEN DIFFICULT TO ANSWER



Source: Oliver Wyman

by expanding the business, or seeking "alpha" (returns in excess of the broader market), by transforming the company's business model. (See Exhibit 3.)

## ENSURING FINANCIAL STABILITY

A clear view on a company's risk appetite can help it to maintain financial stability by allocating capital efficiently and prudently. Several years ago, when the global economy first entered a downturn, the senior management team of a European industrial conglomerate initially sought to capitalize on the company's relative financial strength by buying businesses in non-core sectors to expand the group's portfolio. However, when they analyzed this ambition and the potential targets from a risk perspective, they began to question the viability of this strategy.

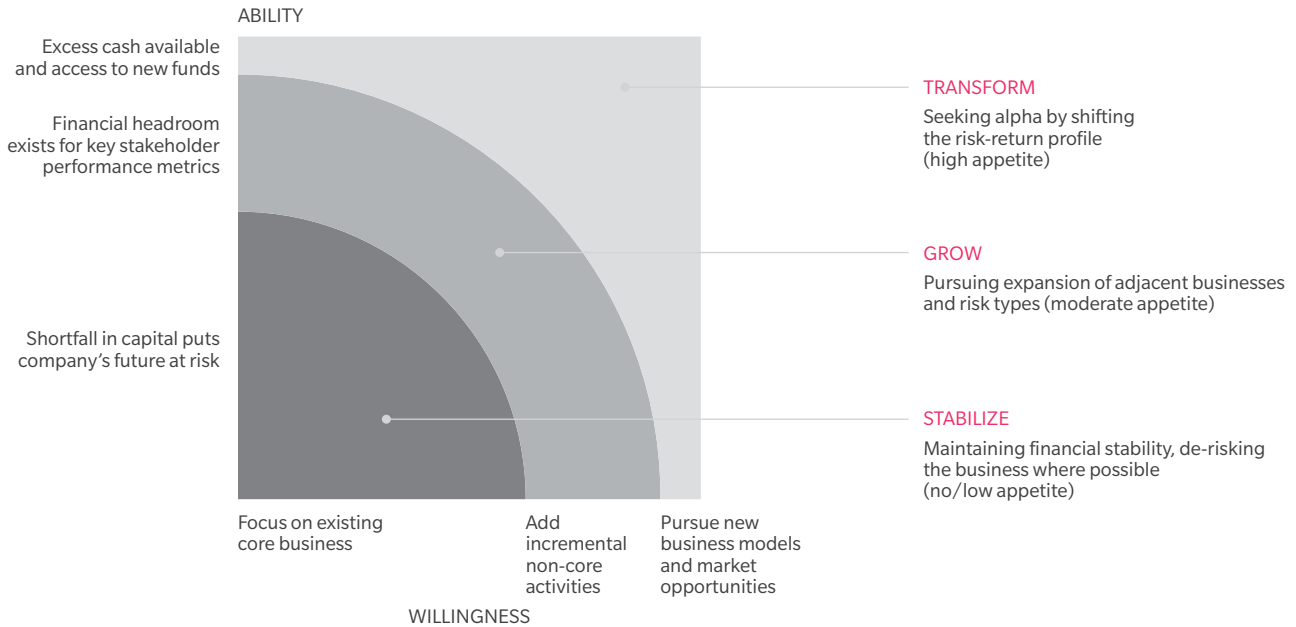
Forecasts showed there was a strong likelihood that the transactions they had in mind would breach their free cash flow to debt target.

The team eventually decided to focus more on their core businesses with the goal of maintaining strong, stable, and predictable cash flows. They began to shed assets to reduce the risks already in the portfolio rather than to add more risk by acquiring non-core businesses. The result: The group avoided a potentially damaging course.



**EXHIBIT 3: RISK APPETITE MATRIX**

A COMPANY’S RISK APPETITE IS THE POINT WHERE ITS WILLINGNESS TO TAKE RISKS AND ITS ABILITY TO DO SO ARE BALANCED



Source: Oliver Wyman

**PURSUING GROWTH OPPORTUNITIES**

A well-defined risk appetite can help executives carry out incremental growth strategies and select optimal ventures more quickly. This may involve expanding an existing capability in a core market or leveraging it to enter a new market.

The leadership team at a North American energy company wanted to launch several new projects to grow their business. But they could only afford to engage in a limited number of non-core capital expenditures. Otherwise, the company might have failed to meet analyst expectations and the chief executive officer’s financial targets.

The team incorporated risk appetite thresholds in their core decision framework for selecting the most worthwhile projects. This strengthened their confidence in the viability of their choices from strategic, financial, and operational perspectives.

They rejected investments in companies with risk-return profiles that pushed the company beyond its risk appetite on a portfolio basis. In one case, the customers of a potential target would have added too much credit risk to the business. In another, a major project was located in a geography that was deemed politically unstable.

Instead, the executives focused quickly on the large capital investments that showed high risk-adjusted returns over the following five years. This enabled the company to meet its overall corporate goal of producing predictable financial returns.



## TRANSFORMING A BUSINESS MODEL

At the most aggressive end of the spectrum, defining a company’s appetite for risk can support a paradigm shift in the risk-return profile of an entire enterprise.

A North American energy refiner and marketer had been conservatively hedging the prices of the raw materials used in its products. But the senior management team identified an opportunity to achieve higher returns by shifting the company’s approach.

Chasing alpha would not be easy. But the company had sufficient cash available to pursue a higher-risk strategy. To realize greater profits from more volatile energy prices,

the company wanted to overhaul its procurement strategy to hedge more dynamically – which meant sometimes holding riskier positions.

To gauge the limit of their willingness to take a bolder path, the team simulated the company’s potential financial performance under a range of market scenarios and evaluated the likely payoffs. This supported the development of a hedging infrastructure, with well-established limits, that enabled the optimization of price risk management activities in rapidly changing market conditions without endangering existing debt covenants or jeopardizing dividend payments.

## EMERGING ON TOP

Many leadership teams will continue to address their company’s risk appetite intuitively or as a one-off analysis. For some, this may lead to a rude awakening, particularly in an unstable business environment.

A well-defined risk appetite enables a company to continuously evaluate and align its willingness to take risks with its ability to do so. (See Exhibit 4.) Companies that can manage their net risk exposures within acceptable boundaries, reconcile the cost-benefit trade-offs, and flexibly respond to change will be the ultimate winners.

They will maximize their company’s earnings potential by allocating resources to the most promising and steady drivers of performance.

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**Mark Pellerin, CFA**, is an associate partner, **Richard Smith-Bingham** is a senior associate, and **Alex Wittenberg** is a partner in the Global Risk & Trading Practice  
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### EXHIBIT 4: RISK APPETITE REPORTS

REGULAR REPORTING ON RISK APPETITE TOPICS SUPPORTS BOTH STRATEGIC DECISION MAKING AND ONGOING PERFORMANCE MANAGEMENT

| PORTFOLIO ALLOCATION OF RISKS               |                           |        |        |       |
|---|---------------------------|--------|--------|-------|
| FINANCIAL HEADROOM (SHORTFALL) CALCULATIONS |                           |        |        |       |
| RISK TAKING CAPACITY REPORT                 |                           |        |        |       |
| Stakeholder                                 | Metric                    | Target | Status | Trend |
| 1. Stakeholders                             | 1.1 ROIC                  | XX%    | ● ● ●  | —     |
|   | 1.2 Diluted EPS           | \$X.XX | ● ● ●  | —     |
|   | ⋮                         | ⋮      | ⋮      | ⋮     |
| 2. Debt holders                             | 2.1 Debt to EBITDA        | X.XX   | ● ● ●  | —     |
|   | 2.2 Debt to Total Capital | XX%    | ● ● ●  | —     |
|   | ⋮                         | ⋮      | ⋮      | ⋮     |
| 3. Rating agencies                          | 3.1 FCF to Debt           | \$X.X  | ● ● ●  | ✓     |
|   | ⋮                         | ⋮      | ⋮      | ⋮     |
| 4. Management                               | 4.1 EBIT to Interest      | X.XX   | ● ● ●  | —     |
|   | ⋮                         | ⋮      | ⋮      | ⋮     |
| 5. Customers                                | 5.1 Customer Retention    | XX%    | ● ● ●  | ✓     |
|   | ⋮                         | ⋮      | ⋮      | ⋮     |

Source: Oliver Wyman

## KNOW YOUR SHAREHOLDERS

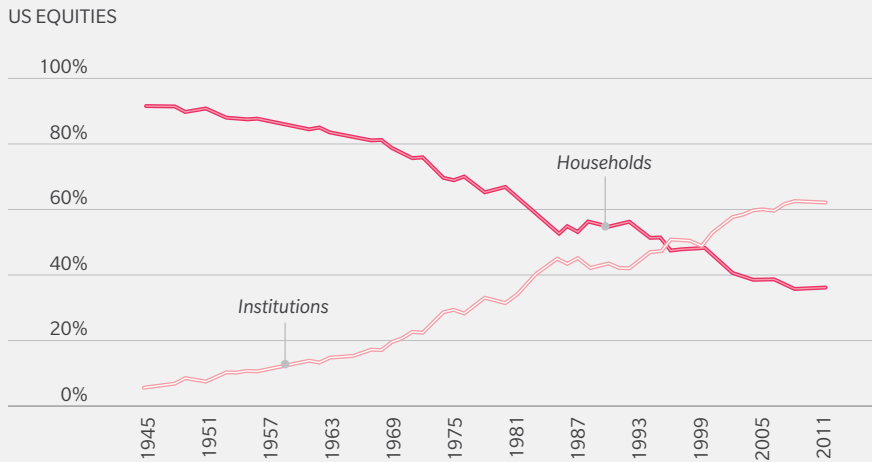
When determining your company’s appetite for risk taking, consideration must be given to the investment criteria of shareholders. This increasingly translates into senior management teams taking those risks that align with the institutional investors’ strategies and guidelines.

The percentage of companies’ shares held by institutional investors in the United States has risen by nine times since 1945, according to the Federal Reserve. Institutional investors became the majority of US shareholders only as recently as 1996. Today, they hold 63 percent of all US equities.

As a result, certain outcomes that might be within the tolerance of senior management could be inconsistent with investing objectives and result in shareholders defecting. For example, if your company deviates from a stated long-term dividend policy to fund a growth opportunity, then fixed income funds may have little choice but to exit, regardless of the potential upside that may be generated.

Given the rise of algorithmic trading, programmed reactions will only become more common, with little opportunity for management recourse.

### EXHIBIT 5: THE PORTION OF US EQUITIES OWNED BY INSTITUTIONAL INVESTORS IS RISING



Source: Federal Reserve





# DYNAMIC FINANCIAL PLANNING

MAKING ENTERPRISE RISK MANAGEMENT MATTER

JOHANNES SCHMITZ, PHD  
ALEX WITTENBERG



Your company presents its financial plan for the next three years. One week later it already feels outdated. Your management team says they want to pay more attention to risk management. Then no one reads the risk reports. Your risk reports list countless risks. But they don't contain any information on how to manage risk or how risk impacts your bottom line.

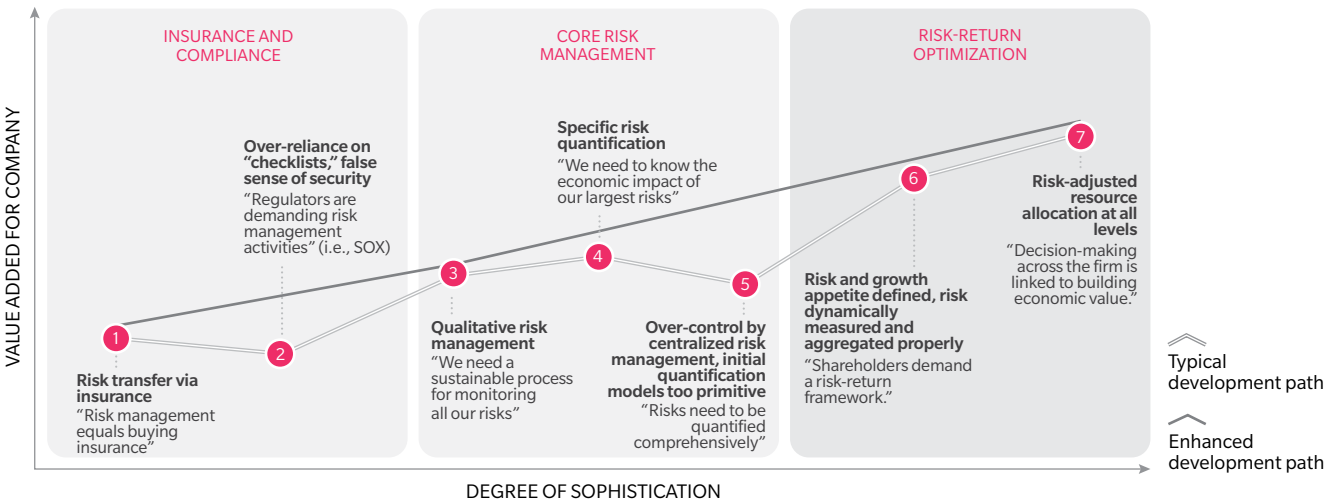
If these situations sound familiar, that's because they are. More than a decade after the concept of risk-return management became popular with the rise of enterprise risk management, or ERM, few companies include risk management in their financial and strategic decision making.

Until companies engage in dynamic financial planning, firms that generate greater value by managing core material risks will remain the exception rather than the rule.

Developing this capability is crucial. Most of the critical variables that companies consider in their strategic planning process have become more unpredictable. The pace and scale of events introducing uncertainty into corporate earnings are increasing. Risks such as volatile commodity prices have become more important, and supply chains have become more complex. Add to this the recent instability of sovereign nations, unprecedented macroeconomic upheaval, and regulatory uncertainty, and it is easy to understand the importance of developing an astute recognition of opportunities and risk.

At the same time, boards of directors and shareholders are increasingly focused on understanding what drives the volatility in companies' earnings and by how much. Their concerns are justified. Companies can make critical strategic miscalculations if executives do not understand the net impact of the risks embedded in inputs, outputs, overall operations, and the markets in which firms operate.

EXHIBIT 1: THE SEVEN STAGES OF SOPHISTICATION IN RISK MANAGEMENT



When a company embarks on dynamic financial planning, it's important for the management team to agree on what is meant by "risk management." Often, risk management can mean different things to different people, functions, or departments.

As shown in Exhibit 1, there are seven stages of sophistication in risk management. Many companies consider risk management to be simply an exercise in compliance. But those that develop a more sophisticated view realize that risk-return management can make a significant difference to a company's returns.

Source: Oliver Wyman

Most companies realize this. But far too often, the underlying risk management process has no real connection to the firm's strategic or financial management. Instead, it's a costly, resource-intensive, compliance-driven, bottom-up evaluation exercise that often results in lists of hundreds of risks. The process is designed to be comprehensive rather than to focus on a few key risks and opportunities that can—and *should*—be managed. Alternatively, the practice is simply an attempt to manage the business on the basis of how results differ from plans that become outdated almost as soon as they're developed.

Compounding the problem, parallel or overlapping risk management programs are often scattered across organizations without any real coordination. Treasury, operations, procurement, legal—all of these functions manage key risks to the organization, often in isolation and using completely different measurements. A company's financial planning and analysis (FP&A) group considers the variability in the financial forecast, while internal audit develops its own plans for "risk." Strategic planning groups are left to create their own quantitative and qualitative assumptions of the risks over the medium and long term, if they are explicitly considered at all.

The result? Financial planning remains disconnected from risk management, and executives are frustrated at having expended significant time and effort pursuing ERM without attaining the promised benefits.

There is a better approach. Executives need to conduct dynamic financial planning as a top-down, strategic examination addressing the drivers and core material risks of the organization. By doing so, a management team can optimize a company's returns because they will be able to evaluate the impact of different scenarios involving multiple risks on financial statements easily, quickly, and accurately.

The potential rewards are substantial: By taking this tack, a Fortune 50 industrial company recently averted a liquidity crisis. Similarly, a major railroad company significantly boosted its return on capital after an evaluation of the organization's key risks revealed the need for it to renegotiate its power contracts.

## HOW A EUROPEAN UTILITY COMPANY REVAMPED ITS BUSINESS PORTFOLIO

A major European utility wanted to expand internationally and focus more on oil and gas production since privatized power markets were harming its margins. In order to ensure this more aggressive strategy would not stretch the corporation's financial resources, the chief financial officer improved the company's risk management framework so that it would better support the management team's decision making through this process.

To gain a clearer picture of the company's overall exposure, the CFO's team identified, quantified, and aggregated strategic, financial, and operational risks in the company's five-year financial plan. Next, he defined limits on risk-adjusted financial metrics that were relevant for the management team as well as for external stakeholders, like ratings agencies. Finally, he examined to what extent the company could adjust the timing of its investments, divestments, as well as its dividend policy if anything went wrong.

By analyzing the effects of different investment programs in terms of risk-return considerations, the management team gained confidence that potential new investments' risk exposures could be efficiently diversified in the company's overall asset portfolio. As a result, the utility was able to revamp its portfolio of business activities smoothly and quickly.



Implementing dynamic financial planning requires a multi-stage effort. Oliver Wyman usually recommends that a company starts by using this process to address its most pertinent issue. Is the company at risk of running out of funding? Does a key strategic decision need to be made? Alternatively, a company may wish to focus first on applying dynamic financial planning to a large capital project or critical business unit. That way, it can determine whether or not the risks involved are aligned with its overall appetite for risk.

Maintaining a brisk pace on a first, short, and focused dynamic financial planning initiative is important as “quick wins” help build momentum. Early improvements make it easier for executives to extend the framework across the organization, eventually resulting in a more focused risk-return culture.

In our experience, organizations must take three steps to successfully incorporate dynamic financial planning into key enterprise-wide decisions:

1. Define and prioritize the core material risks to the entire organization
2. Aggregate the financial impact by modeling the core material risks against the financial projections, considering correlations
3. Integrate the management of these risks into strategic planning and decision making

## HOW AN OIL EXPLORATION AND PRODUCTION COMPANY MET ITS AMBITIOUS LONG-TERM PLANS

An oil company wanted to double its production over a five-year period. But its executives started to wonder if the plan was unrealistic after they failed to reach an early milestone. They worried that the plans did not take day-to-day risks like potential project delays and new exploration failures into account.

To test that assumption, the company examined to what degree internal failures or external risks had caused their initial stumble. Then it built a new financial plan that took into account potential risks involved in pipeline projects, operations, regulatory changes, and commodity prices. With this model, the company increased the transparency in its planning. It also identified key risks to the plan and their interdependencies.

Armed with this new information, the executives revised their approach so that the company could still reach its five-year goal despite these risks. They changed the way the company managed its most important exploration projects. They put more emphasis on developing risk mitigation measures and initiated a new program for identifying new growth opportunities. They also incorporated the enterprise risk model into their regular quarterly financial and strategic planning cycle.



# PRIORITIZING CORE RISKS

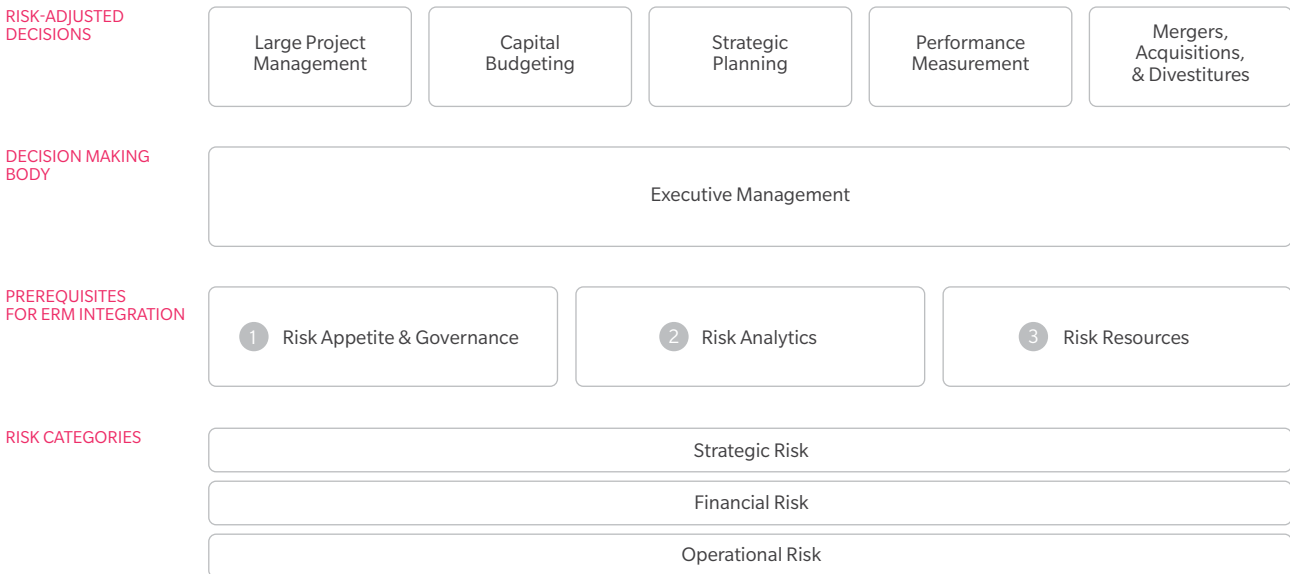
To realize value from dynamic financial planning, executives must first agree on the most important risks to their entire organization. Typically, 10 to 15 of a company’s risks account for roughly 80 percent of its total risk exposure. Yet organizations often waste a lot of time and effort developing risk maps and risk registers filled with risks that have limited meaningful impact. Ideally, companies measure the impact of a few dozen key risks, at most, on a continuous basis under different market conditions.

Executives must therefore agree on the metrics used to measure success for the entire company. They should identify which financial metrics are most important: Cash flow? Earnings per share? Net debt ratio? Those risks that are most likely to cause the company to breach these key metrics or, conversely, to improve them are the risks that must be most actively measured.

After reaching this consensus, executives can then develop a common understanding of the greatest operational, financial, and strategic risks to these metrics as well as the underlying issues that drive them. Indeed, it’s often more effective to assess and quantify the risk drivers as this yields a better understanding of how a risk could ultimately manifest itself.

This same information should also inform longer-term strategic initiatives such as mergers and acquisitions, large project investments, and capital allocations. Such plans can be better assessed, prioritized, and monitored with consistent risk-return reviews.

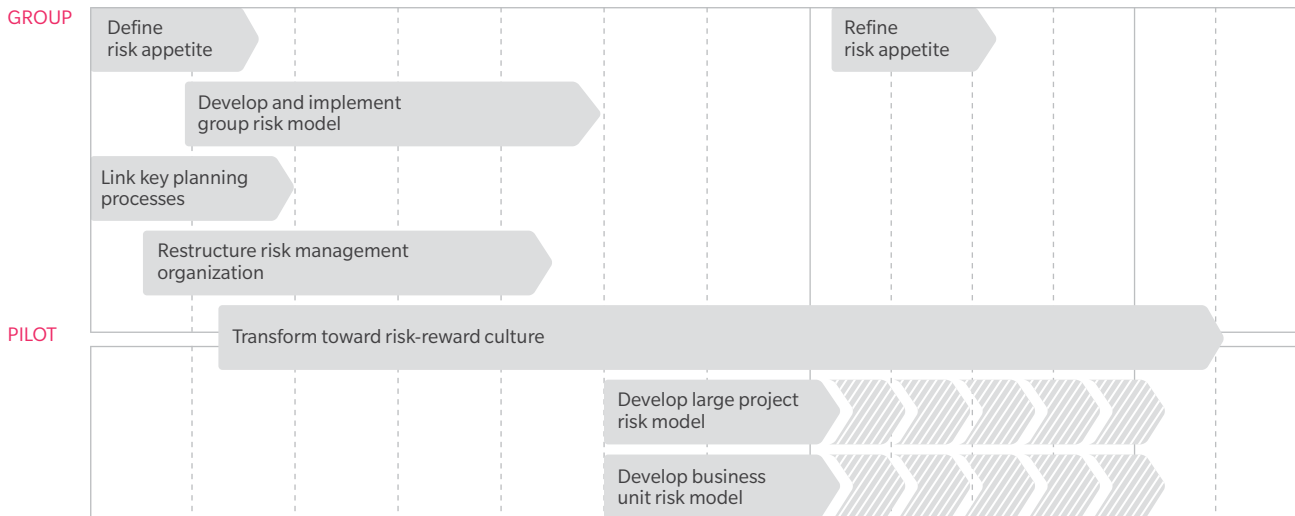
## EXHIBIT 2: DYNAMIC FINANCIAL PLANNING FRAMEWORK DESIGN



Source: Oliver Wyman



EXHIBIT 3: DYNAMIC FINANCIAL PLANNING ROAD MAP



Source: Oliver Wyman

## AGGREGATING RISKS

While prioritizing risks is a first necessary step, it is insufficient on its own. Since the activity takes a simple view of the sources of risk, it often fails to identify those issues of greatest concern: The risks that move financial statement items, the circumstances that cause them, and how these risks inter-relate.

Key risks must be aggregated and quantified to determine how they will likely impact financial projections. Only then can executives begin to analyze the volatility that risks may generate in a company’s financial statements, ranging from fluctuations in short-term cash flow, to uncertainty in annual earnings, to long-term balance sheet instability. Linking risk management to mid-term financial planning also allows a company to attain more transparency and precision in its financial plans.

Armed with this information, executives can more clearly define a company’s appetite for risk by setting limits on risk-taking through actions such as prioritizing investments or buying insurance. When executed well, a company’s risk appetite statement takes into consideration the full breadth of its stake holders—ranging from analysts, to credit rating agencies, to debt holders, to employees, to the media, and government agencies.

Executives can then focus on those risks that they are willing to take and on those risks that are unacceptable. For example, a management team might consider taking a risk that may cause the company to miss a quarterly earnings estimate if doing so would increase the firm’s long-term value. Conversely, executives would probably shy away from taking a risk that could impact the company’s long-term ability to pay dividends, or force it to break a debt covenant that could lead to a credit downgrade.



## LINKING RISKS TO STRATEGIC DECISION MAKING

Finally, executives must consider these risks in evaluating critical strategic decisions. Whether a company is investing in a new technology or expanding into a new geography, it's important to quantify the key risks involved in each initiative and to determine how often they may, or may not, be aligned with the company's overall appetite for risk.

Much of the information and expertise required to weave together dynamic financial planning and strategic decision making is already available within an organization. All that is missing is the "connective tissue" between disparate groups. Those connections are essential for executives to be able to understand and to evaluate the risk-return position of current assets and new investment opportunities.

Developing this risk-return culture isn't easy. Initially, companies require a risk management process and organization that will continuously deliver a standard set of reports with the information necessary to support financial decisions. Sometimes this may involve harmonizing data so that assumptions, such as expected values for input or output prices, are consistent across the firm.

Executives must also take ownership of the dynamic financial planning process. Regardless of organizational structure, the process must be directed by someone who can commit and allocate the necessary resources. This person must have a holistic view of the organization. Otherwise, the company will likely duplicate risk management efforts.

## HOW AN INDUSTRIAL COMPANY IMPROVED ITS ABILITY TO DEAL WITH UNCERTAINTY

As the economy stalled and commodity prices surged, a Fortune 50 industrial firm needed more accurate forecasts for the impact of macroeconomic variables and the industry cycle over a five-year horizon. Several departments were measuring the impact of diverse risks on varying financial metrics. But no one understood how risks—from macroeconomic events, to natural disasters, to operational interruptions—would change the company's financials overall.

To make this determination, the management team first segregated the economy into four "macro" regimes that were a combination of two future economic views (boom and recession) and two industry cycles (tight supply and oversupplied). A detailed set of economic variables ranging from commodity prices, to interest rates, to gross domestic product were modeled under these regimes. Then these variables were mapped onto the corporate and business unit financial statements to understand the circumstances under which these risks would cause the corporation's cash flow to drop below a pre-defined level or threaten the credit rating.

As a result, the management team gained a clearer understanding of the likelihood of various risks associated with its strategic plans and forecasts. Now, the company has the ability to analyze the impact of exogenous scenarios, market dynamics, and strategic actions like acquisitions as it prepares for the future.



Risk information should be part of a company’s strategic decisions enabling executives to consider potential risks and rewards consistently in evaluating future strategic options. Understanding this information allows companies to identify possible correlations between diverse initiatives on a portfolio basis—whether it’s reviewing the launch of a new product, investing in existing infrastructure, or expanding into new markets.

Many executives may believe that their company has already invested more in risk management than is reasonable. To these skeptics, we suggest conducting a small diagnostic. Assign some of your best financial staff for a few months to identify the most meaningful 10-15 financial, operational, and strategic risks.

Then aggregate these risks and quantify how they will impact your company’s financial projections over a one-, two-, and five-year time horizon.

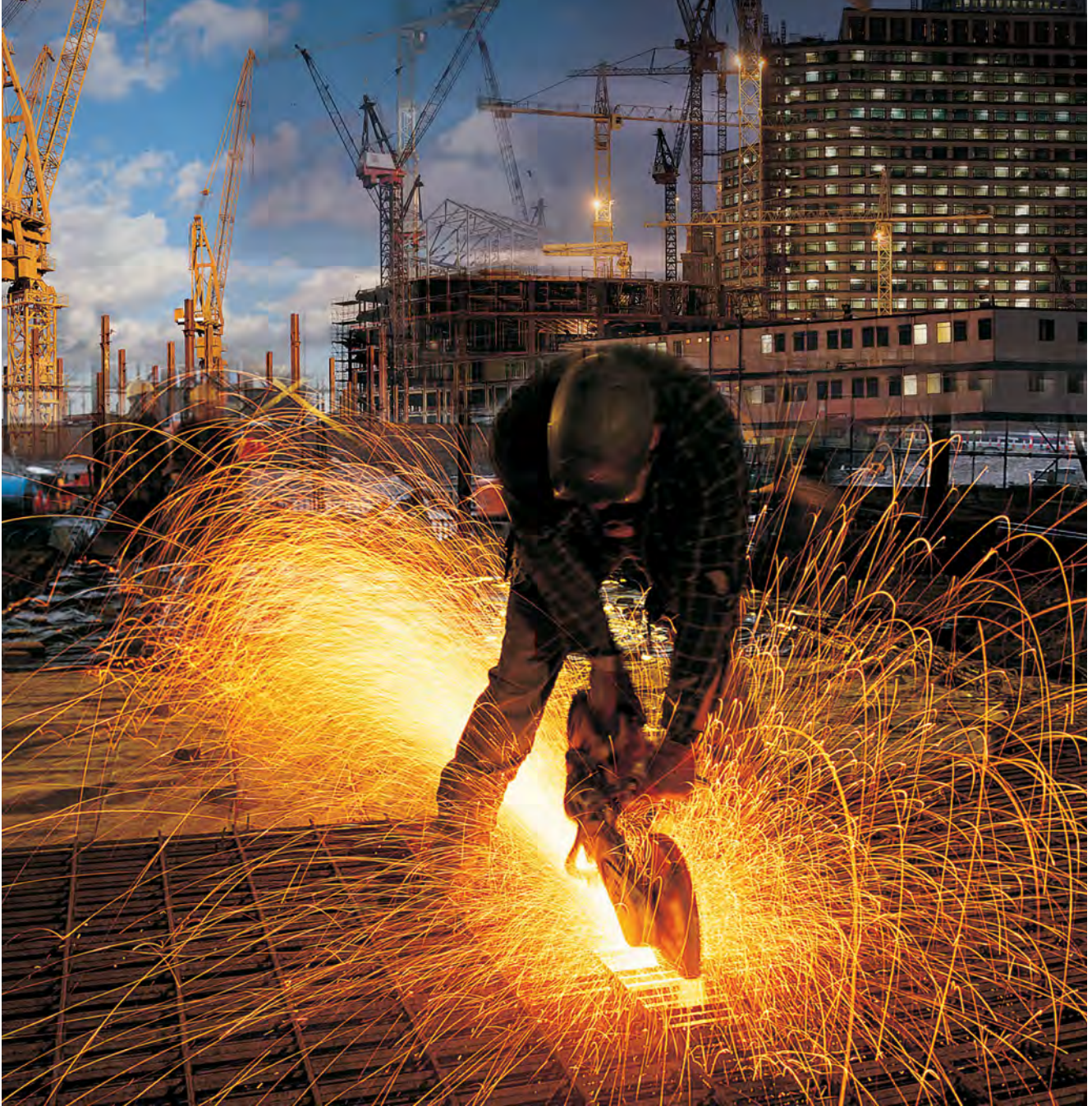
This minimal, but worthwhile, investment will likely surpass the bottom-line impact of past risk management initiatives.

**EXHIBIT 4: QUESTIONS EXECUTIVES SHOULD ASK TO DETERMINE IF THEY HAVE THE APPROPRIATE DYNAMIC FINANCIAL PLANNING RESOURCES IN PLACE**



Johannes Schmitz, PhD, and Alex Wittenberg are partners in the Global Risk & Trading Practice





# MAXIMIZING RETURNS ON LARGE INVESTMENT PROJECTS

LARGE PROJECTS HAVE ALWAYS SUFFERED  
FROM COST OVERRUNS AND DELAYS.  
HERE'S HOW TO BOOST THEIR RETURNS

ALEXANDER FRANKE  
KRISTINA GERTEISER, PHD



At any given moment, more than 200 large public and private capital investment projects, each worth at least \$500 million, are in progress globally. Thousands more valued at \$100 million are under way.

These gargantuan numbers are bound to become even bigger. An estimated \$53 trillion needs to be invested in public infrastructure by 2030 to keep the global economy on a firm path to recovery, according to a recent study by the Organisation for Economic Co-operation and Development supported by Oliver Wyman’s Global Risk Center.

Unfortunately, unless organizations improve how they manage the risks inherent in large projects, these investments could suffer from huge losses. Consider: The construction of a nuclear power plant typically runs over budget and is 150 percent behind schedule. In addition, utility companies forego roughly \$1 million in revenues every day that a plant’s construction is delayed.

There is a better approach. Our research shows that by developing more sophisticated capabilities to manage the risks inherent in infrastructure investments, governments can free up more than \$5 trillion by 2030 for other purposes. The potential impact of these savings could be significant on the public finances of European countries and the United States, which are heavily in debt.

By developing greater transparency around the risks involved in large infrastructure projects and tracking mitigation efforts rigorously, governments and companies can reduce cost overruns and delays by 20 percent, and sometimes much more. That’s because doing so enables organizations to quantify the full economic impact of risks inherent in the capital investments as well as to target efforts to avoid them better—improving their projects’ earnings significantly.

Why, then, do so many governments and companies seem to ignore the opportunity to improve the returns on their large project investments? First, the risks involved in large projects are inherently difficult to manage. They are planned in an environment in which future demand is uncertain and are intended to last for several decades.

## THE WORLD NEEDS \$53 TRILLION OF INFRASTRUCTURE TO SUPPORT ITS ECONOMIC RECOVERY...

| INFRASTRUCTURE FACILITIES                 | AGGREGATE INVESTMENT 2009-2030 (\$TN) |
|---|---------------------------------------|
| Water                                     | 17.7                                  |
| Telecom                                   | 10.9                                  |
| Roads                                     | 7.5                                   |
| Electricity (transmission & distribution) | 6.1                                   |
| Rail “new construction”                   | 5.0                                   |
| Oil and Gas (transport & distribution)    | 3.3                                   |
| Airports                                  | 2.2                                   |
| Ports                                     | 0.8                                   |
| Total                                     | 53.5                                  |

Source: OECD, Oliver Wyman

## ...BUT MANY INFRASTRUCTURE PROJECTS SUFFER FROM COST OVERRUNS AND DELAYS

| PROJECT NAME                            | PLANNED COMPLETION DATE | ACTUAL COMPLETION DATE | YEARS OF DELAY |
|---|-------------------------|------------------------|----------------|
| SWEDEN<br>Hallandsås Tunnel             | 1996                    | 2015                   | 19             |
| US<br>Central Artery/<br>Tunnel Project | 1998                    | 2007                   | 9              |
| KOREA<br>KTX high-speed<br>railway      | 1999                    | 2004                   | 5              |
| UK<br>Scottish Parliament<br>Building   | 2001                    | 2004                   | 3              |
| UK<br>West Coast<br>main line           | 2005                    | 2008                   | 3              |
| AUS<br>Myki –<br>Transportation card    | 2007                    | 2010                   | 3              |
| FRA<br>Flamanville<br>Nuclear Plant     | 2014                    | 2016                   | 2              |
| UK/FRA<br>Channel Tunnel                | 1993                    | 1994                   | 1              |

Source: Oliver Wyman



Second, executives and officials who champion large projects in investment committees are usually unaware of the technical risks involved in the capital investments. In the private sector, these same executives also tend to exaggerate a project's potential financial upside so that the investment will be treated as a top priority.

Finally, engineers confronted with delivering on overly optimistic projections have trouble making the case for steps to be taken to reduce the risks involved in a project. This is in large part because they cannot quantify the difference their suggested actions would make on a project's bottom line.

The result? Few organizations have a firm grasp of the potential impact that risks to the scope of their capital investments may have on their financials, and large projects continue to run over budget. That's a big problem: The real cost of a delayed construction project can be more than five times the cost estimated by engineers when factors such as foregone revenues on a daily basis are taken into account.

This is especially true if an important piece of equipment delivered turns out to be faulty. For example, a company can lose \$1 billion if a nuclear reactor vessel does not meet required specifications since it takes three years to build a new one.

# \$53 trillion

How much needs to be invested in infrastructure by 2030, according to the OECD

Therein lies an opportunity for businesses and governments to improve the earnings of not just their projects, but also their financials overall. To illustrate how this can be achieved, this article highlights several strategies for improving large projects' returns at every stage of their life cycle: From the initial assessment of the investment, to the design of the plan for building it, to its execution.

At each point, opportunities exist for organizations to improve their large projects' performance significantly by better anticipating the risks inherent in them, designing them in a way that will head off delays and cost overruns, while establishing key milestones that can be tracked to avoid potential problems.

## STAGE I: INVESTMENT DECISION—BUILDING THE PROJECT PORTFOLIO WITH THE HIGHEST RISK-ADJUSTED RETURN

By examining data related to risks, companies can improve their large projects' potential returns even before they select them. They can prioritize competing projects and select the ones with potentially higher profit or more stable revenues that will enable them to avoid questions from stakeholders such as rating agencies.

Take the case of "Mountain Railroad." The railroad operator knew its current system was running at near full capacity and desperately needed to expand it. But it was

unsure of how much additional volume it should plan for. The task of figuring out how to expand profitably was daunting since it involved factors ranging from which corridor the operator should upgrade, to whether it should count on heavy hauls across the entire network.

So before going ahead, the operator closely scrutinized the implications of a variety of risks to the project's financial performance. It identified and quantified the impact of potential changes in everything from

demand, to salaries, to tolls, to the prices of the commodities that its trains would transport such as steel, taking into account various operational models and investment scenarios.

Linking such technical information to its business case improved the operator's decisions on a whole host of issues, ranging from the optimal length of its trains to whether it should buy diesel or electric engines.

In extreme cases, analyzing data related to potential risks to a project can also help companies figure out early on if they need to pull the plug. For example, one industrial company halted construction of a chemical plant after investing more than \$40 million in it. After examining the commodity risks involved, the company discovered that new shale gas discoveries would make the project unprofitable. As a result, the company lost its initial investment. But it saved \$2 billion in potential sunk capital costs that would have never paid off.

## STAGE II: PROJECT PLANNING—DESIGNING A PLAN SO THAT IT WILL HAVE THE MOST FLEXIBILITY

Sometimes achieving the highest risk-adjusted return requires taking an approach to a project that can seem counterintuitive—at first. For example, a company may be better off buying an older, more expensive piece of equipment if it is more reliable than a cheaper and more efficient alternative, if it is less proven.

In extreme cases, it might even make sense for a company to buy two sets of a key piece of equipment and then save one in case something goes wrong, even if it may end up disposing of the second unit. That's because the company will avoid delays, which can be costly. In some cases, a delay can end up postponing a project by as much as two years if reams of documents need to be resubmitted.

Allocating more resources to a project can also make a big difference. For example, an oil and gas exploration company discovered that it could improve the financial performance of its project pipeline by hundreds of millions of dollars a year by hiring 20 oil field experts. The company had to pay them a total of \$6 million a year. But the upfront higher cost was well worth it. The company expects to gain \$1 billion over the next six or seven years by reducing the company's project delays by 20 percent with their help.

The case of "Valley Railroad" shows how building more flexibility into a plan to steer clear of risks can significantly

improve a company's return on its investment. "Valley" planned to invest several billion dollars to boost its transport capacity by 30 percent within five years. But the expected payoff from the investment turned out to be wildly optimistic.

Many things were going wrong. The operator's plan was based on the optimistic assumption that the railroad would operate consistently near peak efficiency levels. Upon closer examination, it became clear that it was unlikely to reach this goal.

Project planners had underestimated the risks involved. Suppliers started missing deadlines for new train cars and tracks. Worse, the railroad operator discovered it would not have enough drivers for its new trains. The fact that it takes two years to prepare a new driver for a train required coordination across departments. As a result, this aspect of the plan had fallen through the cracks and had never been taken into account.

In response, "Valley" launched an investment program review and developed a revised capital investment plan. The operator wanted to develop a plan tailored to actual requirements that would avoid introducing equipment that could become obsolete later. To do that, the company revised its capital investment agenda to account for possible key causes of underperformance as well as for upside potential.

By defining a likely range of realistic throughput and revenues over a five-year time frame, Valley improved its business case. For example, the operator substantially increased the probability that it would achieve its targeted

returns by investing in several hundred additional wagons as “insurance capital.” It also focused more efforts on mitigating key risks related to axle load upgrades, crew availability, and improving the efficiency of its operations.

## STAGE III: PROJECT EXECUTION—TRACKING KEY MILESTONES TO AVOID DELAYS AND COST OVERRUNS

The final key to improving a large project’s returns is for managers to monitor closely its operational and financial performance.

The chief executive officer of “Steady Energy,” a global power company, learned this lesson when he began to invest tens of billions of dollars to expand the company’s power generation business globally. In order to prepare the organization for this massive construction challenge, the CEO significantly improved the company’s project delivery capabilities.

For a selected power plant construction project, his team identified the biggest risks to the project based on past and ongoing initiatives. They then quantified the expected harmful impacts to the project’s economic value. Together with the project’s economic planners, engineers, and

technical personnel, the team developed specific plans to avoid certain risks and prioritized them following an assessment of their costs against the expected benefit to the project’s value.

Most important, the CEO’s team established a system to track key milestones and made people responsible for monitoring them. The company was able to improve the performance of the project by several hundred million dollars by developing an early warning system that would track key operational performance indicators like accidents on site or maintenance schedules. Managers also began to visit suppliers more often.

Based on lessons from the pilot, a project risk management framework was developed to be used across the organization’s entire massive investment program.

## IMPROVING RETURNS

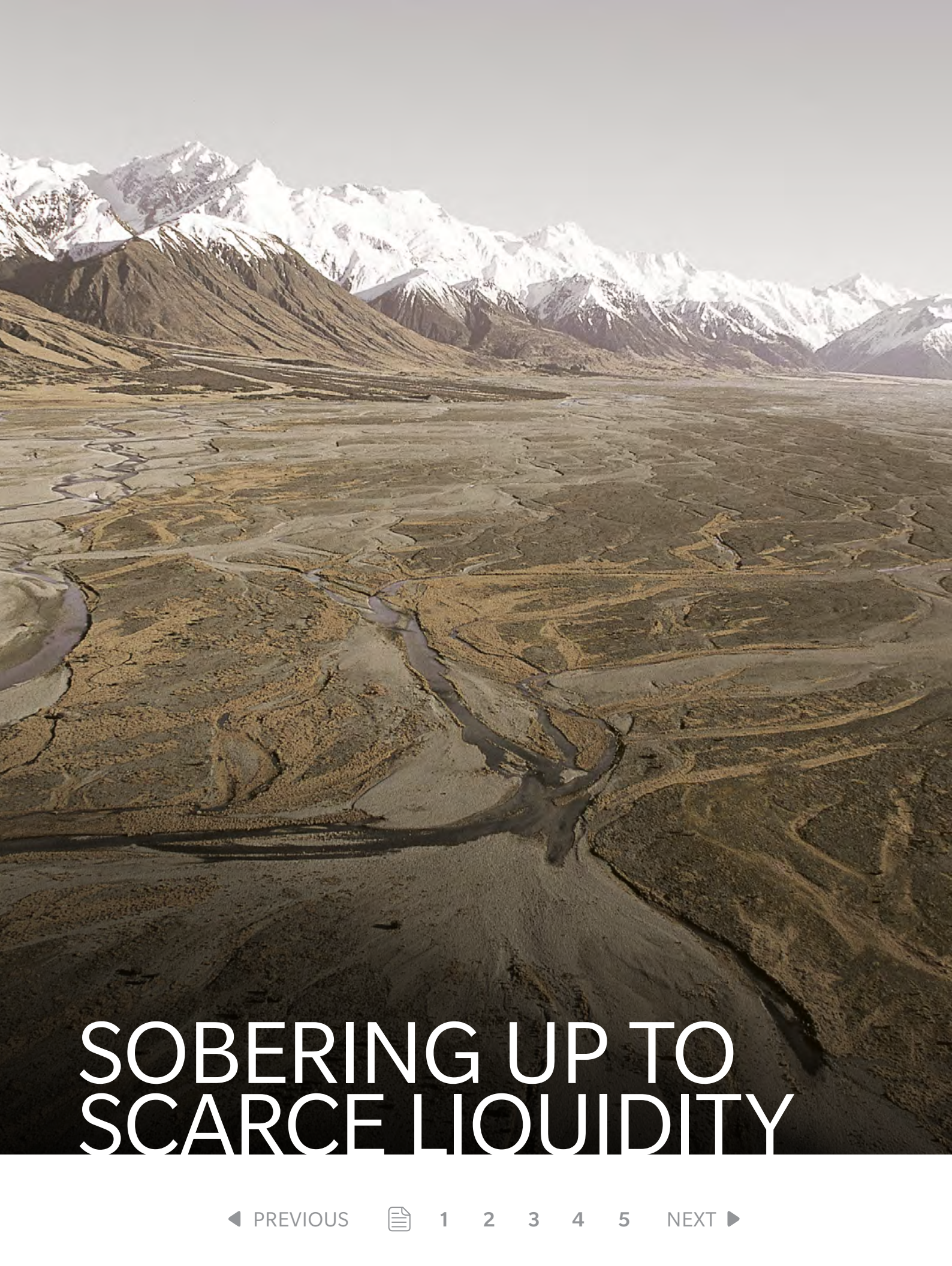
Improving the returns on a company’s capital investments can make a significant difference to its overall financial performance. And yet, it is a very rare company that has fully explored this potential.

In our experience, those governments and companies that apply risk management techniques to their large projects can significantly reduce delays and cost overruns.

Developing this capability is crucial to addressing the growing infrastructure gap that threatens the long-term development of emerging and developed economies.

.....  
**Alexander Franke** is a partner in the Global Risk & Trading Practice and **Kristina Gerteiser, PhD**, is an associate partner in the Corporate Finance & Restructuring Practice  
 .....





# SOBERING UP TO SCARCE LIQUIDITY



## BANKS NEED TO MAKE THEIR FUNDING REQUIREMENTS TOP PRIORITY

SIMON COOPER  
JOHN WHITWORTH

The populations of most western countries had negative savings rates before 2007, spending more than they earned, and borrowing to cover the difference. Most western banks had loan-to-deposit ratios in excess of two to one.

But this did not increase their funding costs because wholesale funds were extraordinarily abundant. Banks could be leveraged 35 to one and still pay almost no “risk premium” in the wholesale markets thanks, in part, to the massive growth of savings in emerging markets and to the perception (accurate, as it turned out) that even wholesale bank debt enjoyed government guarantees.

This almost free leverage allowed many banks to deliver returns on equity above 20 percent. So, equity capital was also in easy supply. In short, when it came to the principal resource of banks—namely, debt and equity capital—the basic economic problem of scarcity seemed to have been abolished.

Of course, this was an illusion. And, like most illusions, it was dangerous. It removed banks’ incentive to be astute managers of their financial resources. A business gains no advantage over its competitors by being better at managing a resource that is free, such as the air we breathe. While debt and equity capital flowed cheaply to all banks equally, regardless of the risks they were taking, they became careless managers of it.

We all know what happened next.

Now banks find themselves with exceptionally scarce and expensive financial resources. Indeed, private investors are so reluctant to provide European banks with funding that most depend on the European Central Bank. Managing scarce financial resources—a skill that had little relevance to banks only five years ago—is now a matter of existential importance.

## COMPLIANCE IS NOT A STRATEGY

At the same time that equity capital and long-term credit, such as illiquid bank liabilities, are becoming painfully scarce and expensive, regulators are demanding banks to hold more of both of them. This effectively forces banks to increase lending margins to raise capital from retained earnings and to deleverage, often by reducing lending, which Basel 3 demands be funded by illiquid liabilities. Under these conditions, bank managers may well feel that when it comes to managing financial resources, simply complying with the new regulations is ambitious enough.

That would be a mistake. New capital and liquidity rules force banks to move down the risk-return spectrum. For some lines of business—such as over-the-counter derivatives trading—the increased capital and liquidity

requirements are so great that many banks shouldn’t comply, but should exit. Banks have displayed lamentable inertia about strategy since 2008, continuing with lines of business that have no future even today.

Moreover, for the lines of business that remain viable, strategic decisions need to be far more influenced by financial resource considerations than they were in the pre-2007 era of abundance. A bank’s capital and funding requirements can no longer be something it discovers after deciding on its strategy. They must be the first considerations in setting strategy. For example, businesses that naturally generate illiquid liabilities, such as retail branch banking, have become much more valuable since 2007.

## Managing scarce financial resources—a skill that had little relevance to banks only five years ago—is now a matter of existential importance

Financial resources are allocated not only by the strategy and planning process. Most decisions made by customer-facing staff and their managers have implications for capital and liquidity. Alas, these decisions are often evaluated and rewarded in ways that take, at best, only

partial account of their financial resource implications. The demands that business decisions place on the banks' liquidity are commonly poorly reflected.

Banks must remedy this failing in their performance management and incentive schemes. Only rarely is there a measurement problem. The pre-2007 efforts to comply with Basel 2 provided most western banks with improved risk measurement capabilities.

While these should certainly be improved, the real trick is to use them not just for reporting and regulatory compliance but for informing business decisions. When financial resources were abundant and cheap, it did not matter much. Now it does.

## RISK MEASUREMENT IS NOT RISK MANAGEMENT

As noted, the new liquidity rules of Basel 3 increase the value of businesses that naturally generate stable liabilities. There is no evidence that insurers lobbied for these rules, but they should have.

Life insurers especially have remarkably stable liabilities. For example, annuities are for life. Once a customer buys an annuity, it's difficult to reverse course, forgo the promised income, and have what is left of the capital returned. The customer is locked in. This means that insurers are perfectly placed to take advantage of the problems banks are facing. Insurers can supply the long-term credit that banks no longer can. They have a historic opportunity to expand their role on the provision of credit.

This may sound odd to those who are familiar with the provisions of Solvency 2, the new regulatory framework to be applied to European insurers from 2013. Solvency 2 sets capital requirements for insurers and, among other provisions, it makes insurers capitalize the debt instruments they invest in on a mark-to-market basis.

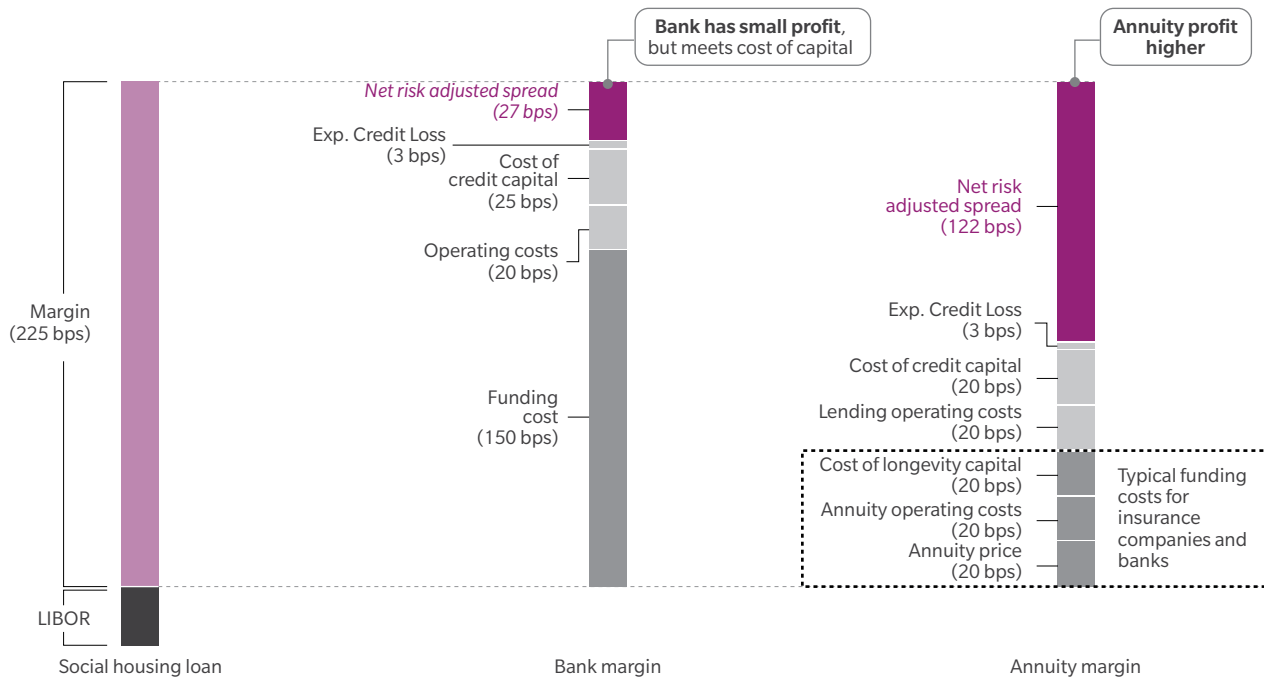
Without a volatility damper such as the Solvency 2 matching premium, this makes the value of long-term debt instruments volatile and significantly increases the amount of capital that insurers must hold against them.

The exact outcome of Solvency 2 is still to be finalized. If a matching premium is not permitted, the standard view is that it will lead insurers to reduce their holdings of long-term debt.

But this ignores the fact that banks are facing new, and heavier, burdens. Even allowing for the effects of Solvency 2, the illiquid liabilities of insurers mean that they still enjoy a structural advantage over banks. A typical return from making a corporate loan should be around 65 basis points higher for an insurer than for a bank assuming an unfavorable Solvency 2 outcome, or 90 basis points higher assuming a positive Solvency 2 outcome. (See Exhibit 1.)

Insurers can supply the long-term credit that banks no longer can, giving them a historic opportunity to expand their role within the financial industry

EXHIBIT 1: ANNUITIES NOW PROVIDE A MUCH MORE EFFICIENT SOURCE OF DEBT RELATIVE TO BANK FUNDING\*



Source: Oliver Wyman analysis

\* Based on a representative 15 year secured social housing loan

Alas, insurers are displaying the same strategic inertia as banks. With a few small exceptions—such as Aviva’s commercial mortgage lending in the United Kingdom—insurers continue to limit their credit business to buying liquid debt instruments, such as government bonds and high-grade tradable corporate debt.

Making long-term loans or investing in illiquid debt instruments would require insurers to extend their sales and risk-assessment skills. But this is not an insuperable challenge, especially given the number of bankers who have recently been made redundant. Given the lackluster shareholder returns of most insurers over recent years, they ought to pounce on this opportunity for profitable growth.

Everything has changed since 2007. Financial firms became blind-drunk, passed out in an oasis of capital and liquidity, and awoke in a desert. Yet, if you look at their 2012 business models, you might think that little has changed. They still do many of the same things, and their decisions still pay scant attention to the financial resources that are available to them.

Regulatory uncertainty and ongoing support from central banks may explain this. But they do not justify it. Managers of financial firms must clear their heads and adapt to the new world of financial scarcity. They must become expert financial resource managers.

Simon Cooper is a partner in the Finance & Risk Practice. John Whitworth is a Partner in the Insurance Practice





## LIQUIDITY RISK

### THE KILLER RISK NOW TAKES AIM AT THE CORPORATE SECTOR

REBECCA EMERSON and BORIS GALONSKE

After spending many years in the shadows, liquidity risk has suddenly become a hot topic in risk management, having proven itself as a killer risk during the financial crisis. Banks were clearly at the center of the recent liquidity crisis, with many of the world's largest banks failing to survive due to their inability to refinance themselves. One of the unintended consequences of the new banking regulations will be that future liquidity crunches will spread beyond banks and will likely cause major damage in the corporate sector. Corporations need to start thinking seriously about their own liquidity risk position and how they can best navigate their way through a future liquidity crunch.

The most obvious link between banks and corporations is the fact that corporations are, to a large extent, dependent on banks for their financing needs. When a liquidity freeze hits the financial sector it doesn't take long for the chill to be felt in the corporate sector.

The contagion effect is likely to get a lot worse in the future because the new Basel 3 rules that are about to be imposed on banks will push the problems of liquidity risk management into the corporate sector. These new rules will make it very difficult for banks to perform their traditional role of maturity transformation, meaning that corporations will struggle to obtain long-term financing from banks. Lack of access to such funding will constrain a corporation's ability to plan ahead and leave it at the whim of the banks, which might choose to cut short-term credit lines at the first sign of trouble.

Worse still, the new clearing rules that aim to migrate derivatives trades toward centrally cleared platforms will force corporations to post daily margins against their derivatives positions, which will cause massive day-to-day fluctuations in a corporation's liquidity resources. Taken together, these two effects point toward a world where a corporation has much less control over its own liquidity resources, with the demand for liquidity looking likely to increase at a time when the supply of liquidity is being cut off.

Banks that survived the recent financial crisis have been forced by regulators to upgrade their risk management practices so that they are better prepared for future liquidity crises. One tactic has been to push much of the risk out of banking and into the corporate sector. As a result, the next liquidity crunch is most likely to rear its ugly head in the corporate sector. Corporations will need to make similar risk management upgrades if they want to avoid being the next victim of this killer risk.

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**Rebecca Emerson** is a partner in the Finance & Risk Practice. **Boris Galonske** is a partner in the Global Risk & Trading Practice

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# THE NEW FACE OF PROJECT FINANCE

BANK AND GOVERNMENT INFRASTRUCTURE FUNDING CUTBACKS ARE FORCING PROJECTS TO BE FINANCED DIFFERENTLY

ERNST FRANKL  
STEVEN MEERSMAN  
AXEL MILLER

A large power company recently had to scramble for new sources of funding after its government financing was abruptly halved in the middle of a 20-year power plant upgrade and investment program. Executives examined alternative financing sources ranging from a private placement to a loan fund. They even considered changing how they were paying their suppliers. The loss of funding had put much more than the project in jeopardy: the company itself was suddenly at risk of reduced profits and threatened by a credit rating downgrade.

These are tough times for infrastructure projects. Until recently, banks and governments gladly financed the roads, bridges, and power plants needed globally. Now, they are pulling back their financial support in reaction to regulatory reforms and increasingly severe budget deficits.

These cutbacks could not have come at a worse time. The burden of maintaining roads, water systems, and other facilities in Europe and North America, many built in the 1950's, is becoming difficult for governments to bear. Meanwhile, emerging countries are struggling with infrastructure that is proving to be insufficient to support their economies. India, for example, is facing an energy crisis because of its inability to supply enough electricity to keep the lights on at corporate office towers and to provide enough fuel for 1.5 million new vehicles added to the roads each month.

The decline of traditional infrastructure financing is introducing a whole new set of risks to infrastructure projects and triggering a sweeping change in how developers, and other companies, will need to manage projects. Moving forward, infrastructure sponsors will need to embrace unfamiliar long-term financing schemes that rely, at least in part, on public capital markets. This will require them to address a much wider investor group than they previously have, and to engage in investor relations much more proactively. Developers will need to demonstrate to new investors a detailed understanding of their projects' risks and future cash flows, in part by documenting a track record of previous successes.

Less than

1%

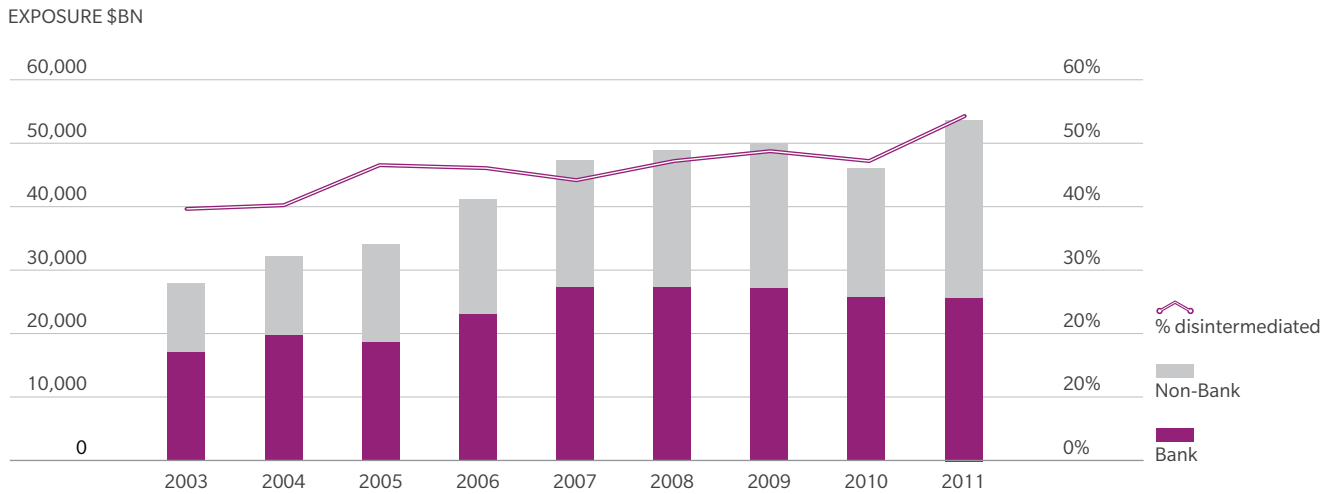
of pension funds invest in energy infrastructure

Equally important, infrastructure sponsors will have to adopt a two-tiered approach to financing their projects – simultaneously addressing both their larger long-term needs and the health of the many small and mid-sized suppliers that every project's success depends on. Indeed, some developers have already begun to extend their own short-term financing to suppliers who are struggling to deliver critical equipment because they are experiencing financial difficulties or teetering on the edge of bankruptcy.

The infrastructure players who first develop the capability to come up with innovative financing solutions will have a significant competitive advantage for several reasons. First, they will benefit from cheaper and more stable financing. Second, they will suffer from fewer delays by avoiding searches for new suppliers. Third, they will be able to tap a potentially huge untouched amount of alternative infrastructure funding available. Consider: less than one percent of pension funds, which have an estimated total of \$65 trillion in assets, invest in energy infrastructure today, according to a recent study by the Organisation for Economic Co-operation and Development sponsored by Oliver Wyman's Global Risk Center.

EXHIBIT 1: MOST WESTERN FINANCINGS ARE NOT PROVIDED BY BANKS

WESTERN EUROPE FINANCINGS  
2003-2011



Sources: Central bank data, Dealogic, Oliver Wyman analysis, AFME, SIFMA

## EMERGING ALTERNATIVE FUNDING SOURCES

It is tempting to view recent cutbacks in infrastructure financing by banks and governments as a temporary phenomenon tied to the recent financial downturn. But we believe infrastructure projects will continue to experience a funding problem, contributing to significant risks to global economic growth.

New regulations will permanently restrict the ability of banks to fund projects by forcing them to shore up their capital reserves and to shrink the amount of debt on their balance sheets. At the same time, the reduced amount of bank financing will become more expensive in part because the banks will need to ensure that their long-term loans are funded with stable long-term liabilities. As a result, the share of infrastructure projects financed by sources other than banks should increase to resemble the mix of financing markets overall. Less than half of all Western European financings now come from banks. (See Exhibit 1.)

In the public sector, infrastructure spending will only continue to decrease as governments attempt to cope with rising budget deficits by reducing their expenditures. The budget deficits of the United Kingdom and the United States are expected to account for 15 percent of their gross domestic products by 2014, up from 10 percent in 2010.

So continuing to rely on bank and government financing isn't the answer. Companies and developers need alternative financing tools to make up for massive, and growing, infrastructure financing shortfalls and to push forward the infrastructure projects necessary to rev up the global economy. This is starting to happen. For example, Dubai-based Dolphin Energy raised \$1.25 billion by issuing infrastructure project bonds in February 2012.





Here are two ideas that if adopted widely could help:

## THE CAPITAL MARKETS

Governments already issue bonds to finance infrastructure projects. But developers and companies have only just begun to tap the potential of the world's debt and equity markets for this purpose. Our research shows that British, French, and German insurers combined have \$2.4 trillion of predictable liabilities that are well-suited for long-term investments.

Infrastructure investments provide long-term, stable cash flows that are attractive to life insurance companies and pension funds with long-term liabilities. They also have a low risk of default, especially after the infrastructure has been constructed.

A simple but potentially powerful way to raise financing from these investors would be for developers and companies to offer them the opportunity to participate in private placements. Sovereign wealth funds and Chinese corporations are already showing interest in loan contracts with a project's owner. In 2012, Chengdu-based DongFang Electric Corporation, one of China's largest companies, invested \$500 million in a coal power project in Stanari, Bosnia-Herzegovina. Meanwhile, the Export Import Bank of China is providing 85 percent of the financing for a bridge being constructed by Hong Kong-based China Road & Bridge Corporation in Belgrade, Serbia.

Infrastructure sponsors can also try to attract funding from special purpose vehicles, such as loan funds. These funds are typically managed by an experienced third party that

Continuing to rely on bank and government financing isn't the answer. Companies and developers need alternative financing tools to make up for massive, and growing, infrastructure financing shortfalls.

actively seeks to give out loans in line with an investment mandate. Investors can acquire stakes in these funds, which often guarantee a certain proportion of the interest income and principal.

Other options are to securitize projects or to issue bonds. As government bonds become less attractive, institutional investors will seek to diversify into other debt assets.

## THINK LIKE A MANUFACTURER

For years, automobile manufacturers have been extending financing to their suppliers. Infrastructure developers should follow in their footsteps.

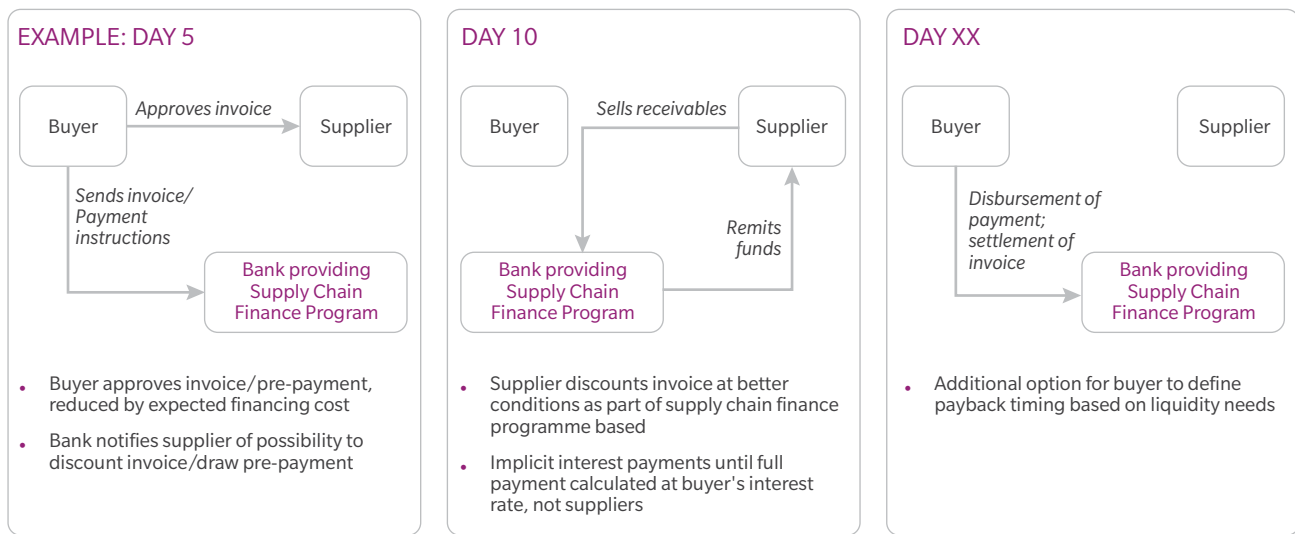
In the wake of the economic downturn, many suppliers have large funding needs, especially as developers try to lengthen payment periods. Yet traditional financing options for addressing these working capital gaps, such as overdraft accounts, are becoming more expensive or unavailable.

One approach to reduce the risk of cash-strapped suppliers derailing an infrastructure project would be for infrastructure sponsors to help their suppliers gain cheaper access to capital from a third party lender by providing the invoices to the lender as collateral. Manufacturers have been using this technique to reduce the risk of expensive production interruptions in a just-in-time production environment by establishing such supply chain financing systems with their bank.

These invoices can often be converted into cash immediately after approval from the buyer. The interest the seller pays is usually set somewhere between the buyer's and seller's typical interest rate. In some cases, the buyer can self-fund the program and act as a lender, which allows the supplier to capture interest income on unused cash balances.

The supply chain platform described above assumes that a supplier's goods and services have been delivered and that an invoice can be issued which then serves as collateral. This helps to minimize the overall financing cost for a project and allows cash-strapped suppliers to circumvent long payment cycles for a small fee.

EXHIBIT 2: HOW AN INFRASTRUCTURE SPONSOR CAN HELP A SUPPLIER BORROW AT A LOWER COST



Source: Oliver Wyman

However, project sponsors should still take the time to consider if they are willing to accept some of their suppliers' credit risk to ensure supply stability. If not executed properly, this type of financing arrangement can actually create significantly more risk for a project's

sponsor, since the sponsor does not have any control over a supplier's operations. To avoid this, the project sponsor should link payments to clear milestones and maintain very close communication with its supplier at each step along the way.

## A MORE COMPLEX WORLD

To be sure, each of these new approaches to financing infrastructure projects comes with challenges. Banks have traditionally provided financing and have built up the capabilities to analyze the risks over the entire lifetime of an infrastructure project. Only the largest pension funds and insurance companies have this expertise.

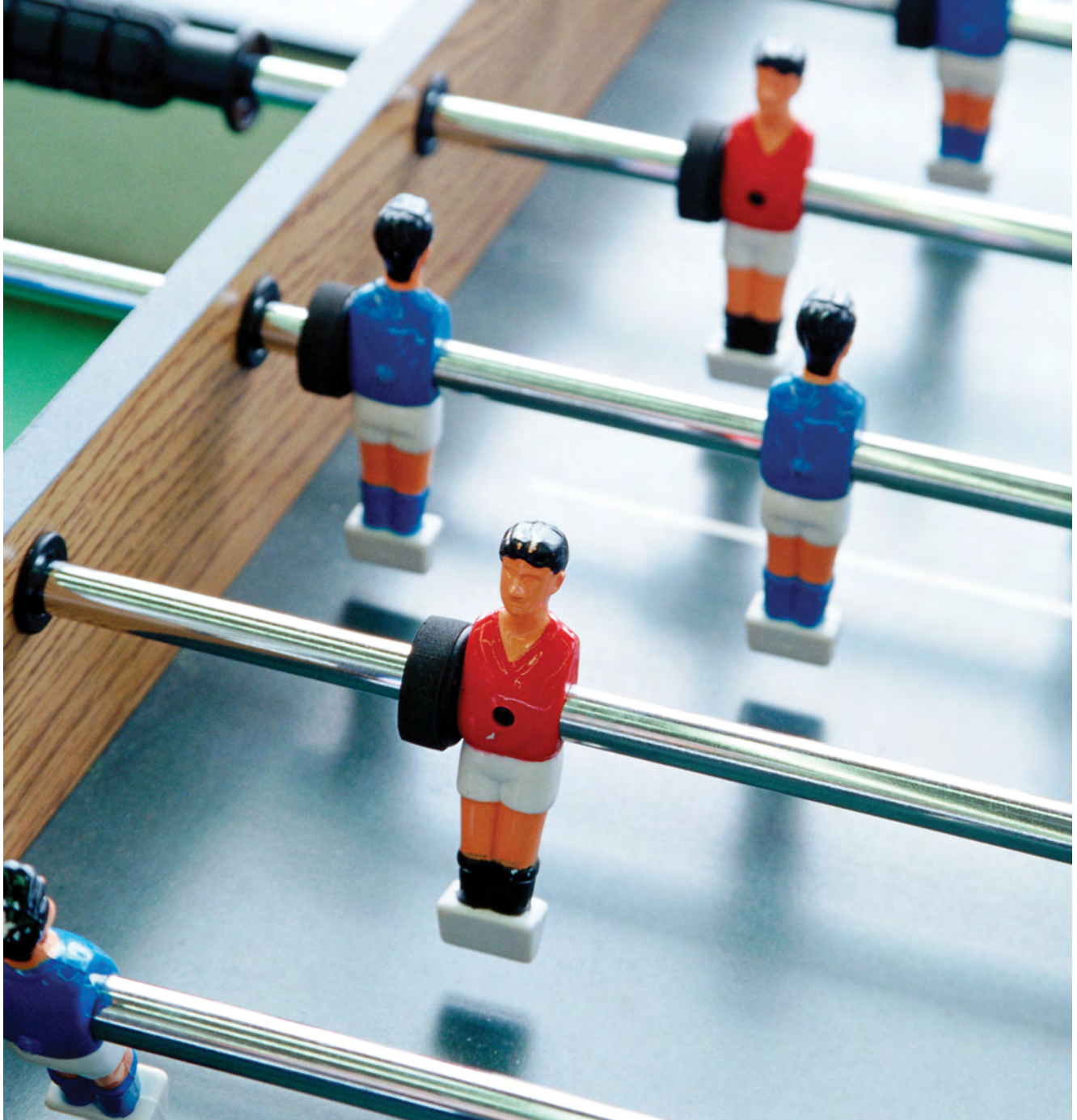
Developing a supplier financing program is demanding. Significant time needs to be invested to communicate the benefits of the program to suppliers in order to secure a high rate of participation and to establish the software

processes necessary to track information on deliveries, invoices, and the release of funds.

Nevertheless, developers and companies, in general, need to accept that the institutional appetite for financing infrastructure projects has been permanently altered. The key to executing projects successfully in the future will be developing the capability to operate independently from bank and government financing. This change in approach is needed to ensure that infrastructure projects continue to be financed going forward and support global economic growth.

**Ernst Frankl**, associate partner, and **Steven Meersman**, associate, are in the Global Risk & Trading Practice. **Axel Miller** is a partner in the Corporate & Institutional Banking Practice





# MAKING BETTER INVESTMENTS

HOW TO TURN STAND-ALONE INVESTMENTS INTO A UNIFIED STRATEGY

JOHANNES SCHMITZ, PHD

The long-term success of a company depends in large part on its ability to select the investments that will create the most value. But most executives routinely rely on basic calculations or their gut instinct to make these critical decisions. As a result, many often overlook the investments that could make the biggest difference to their organization’s future.

In our experience, the companies with the strongest investment track records evaluate their investment opportunities on two levels. First, they systematically link their individual investment evaluations to their overall strategy and capital allocation decision making processes. Second, they rigorously quantify and assess the specific risk-return characteristics of each individual investment project, instead of relying on generic risk factors when deciding on the discount rate to be used to calculate an investment’s potential returns.

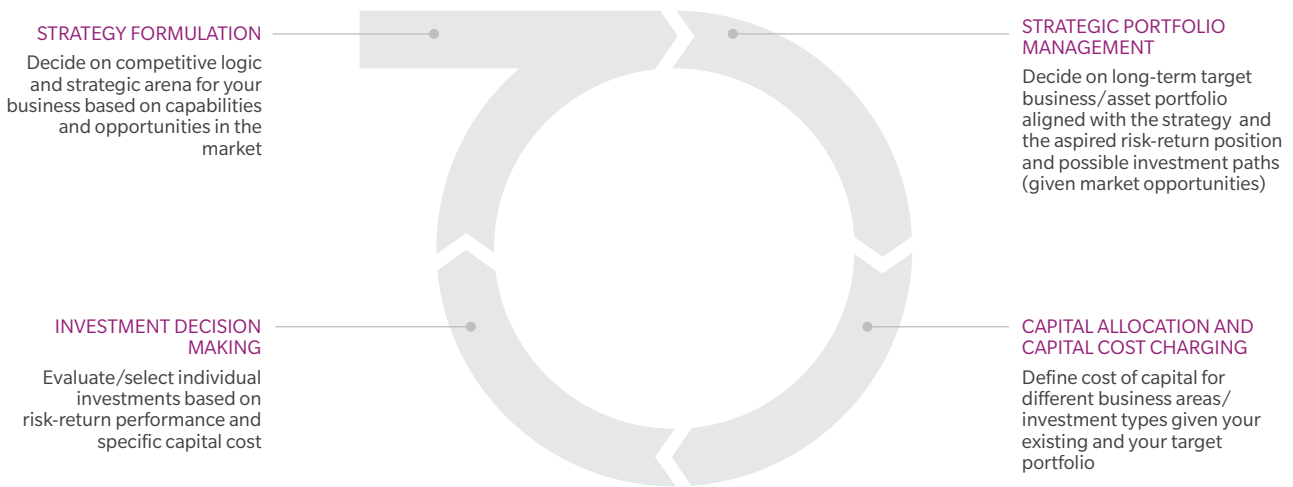
Why is this important? Corporations are increasingly active in businesses with very different risk-return

characteristics. Energy companies, for example, often have oil and gas exploration divisions with high exposure to volatile commodity prices while their renewable business is vulnerable to regulatory and political uncertainties. Meanwhile, their power grid business typically offers stable returns. If management teams do not analyze the differences in these units’ costs of capital and apply them to their investment case evaluations, they may rule out investments that are actually worthwhile.

Companies are also increasingly expanding into new terrains. Investments in emerging markets like China, India, and Brazil are often difficult to evaluate. While top executives often see a clear strategic rationale for investing in these areas, generic country risk factors artificially increase the hurdles for the investment cases. The risk factors assigned to emerging markets are generally exaggerated. As a result, these strategic perspectives are often not aligned with quantitative assessments, in part because they neglect long-term strategic benefits.

EXHIBIT 1: THE INVESTMENT DECISION MAKING CYCLE

COMPANIES THAT EXCEL AT MAKING INVESTMENTS LINK THEIR INVESTMENT EVALUATIONS TO THEIR OVERALL STRATEGIC AND CAPITAL ALLOCATION DECISION MAKING PROCESSES



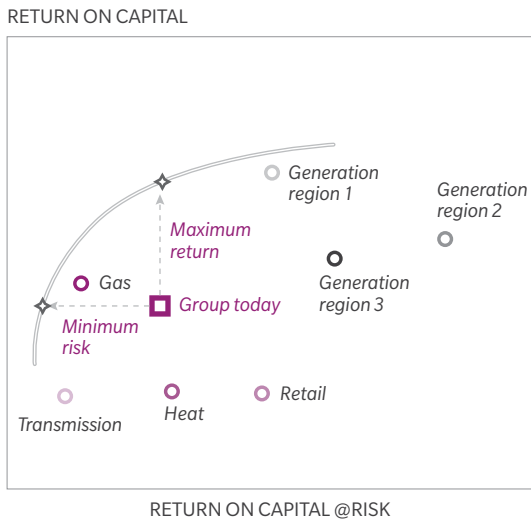
Source: Oliver Wyman



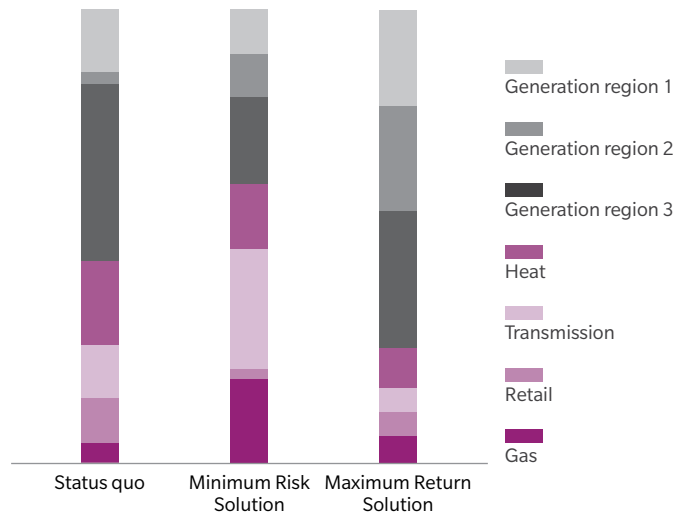


EXHIBIT 2: HOW ONE COMPANY IMPROVED ITS RISK-RETURN PROFILE BY RESHAPING ITS PORTFOLIO

RISK-RETURN PROFILE OF PRESENT PORTFOLIO



POTENTIAL FUTURE ALTERNATIVE PORTFOLIO STRUCTURE



Source: Oliver Wyman

## SET A TARGET BUSINESS PORTFOLIO

The first critical step for executives to select the investment path that best aligns with their strategic goals is for them to agree upon the business portfolio that they would like to aim for over the next five to ten years. A management team should determine a target business portfolio by analyzing the separate risk-return profiles of different alternative investments as well as their resulting overall portfolio.

As Exhibit 2 shows, a company can significantly improve its target risk-return profile by reshaping its portfolio.

Depending on its risk appetite, the company will look for investment opportunities that reduce risks while maintaining its returns—or a new portfolio structure that increases returns while maintaining the overall level of risk. A risk-return analysis of the current portfolio and new opportunities will allow top executives to discuss options systematically given capital constraints, stakeholder expectations, and market constraints to develop alternative portfolios that match the company’s desired strategic positioning.

## CALCULATE THE REAL COST OF CAPITAL

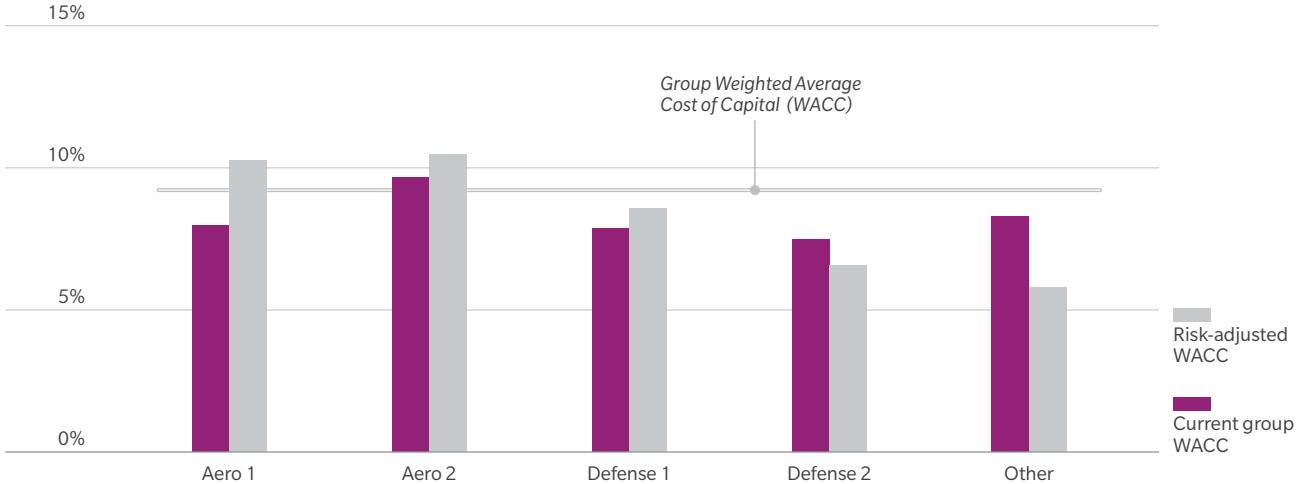
Based on the current and the target portfolio, we recommend that executives derive the risk-return impact of additional investments in each of the portfolio’s business areas as well as on the capital costs for the company as a whole.

Many companies make miscalculations by using mainly generic assumptions to analyze different business units’ cost of capital. A risk-adjusted cost of capital takes into account the different risk-return characteristics of each business unit as well as their correlation to the overall company’s cash flows.



EXHIBIT 3: DIFFERENT CALCULATIONS, DIFFERENT INVESTMENTS

IF COMPANIES USE THEIR OVERALL AVERAGE COST OF CAPITAL TO EVALUATE INVESTMENTS, THEY MAY OVERESTIMATE THE RISKS INVOLVED BY SEVERAL PERCENTAGE POINTS



Source: Oliver Wyman

In the case of one European aerospace company, this different approach to calculating an investment’s potential return made it clear that an investment was viable that the company otherwise would not have pursued.

This is because the differences between business units’ costs of capital were as much as five percent. As a result, the cost of capital for the potential investment differed from the company’s original assumption by between one and three percent.

RIGOROUSLY EVALUATE THE SPECIFIC INVESTMENT

Finally, executives need to scrutinize the business cases for potential investments in a way that reflects the specific risk-return characteristics of the individual investment project. But this is often not as simple as it sounds.

Many companies base their investment decisions on business cases that take into account generic risk adjustments such as business area characteristics or global country risk factors. They stress test an investment by modeling the investment’s expected performance in two or three alternative scenarios. Risks are often reflected by using ambitious or “conservative” hurdle rates. Additional long-term opportunities stemming from new investments are often neglected. In addition,

some companies use “standard life times” for all investments rather than considering the full life cycle of each investment.

We recommend a very different approach. In our view, executives need to consider each of their potential large investments after estimating the expected cash flows for the full life cycle of each project discounted by using a risk-adjusted, weighted average cost of capital (WACC). They should model the impact of specific risks and ask tough, targeted questions, such as: What happens to cash flows and the returns on an investment if the project gets delayed? What happens if country regulations change? What happens if the supply chain gets interrupted?



Executives should also estimate the impact of potential options that may emerge over time on their potential investment's returns. For example, a factory's capacity may be relatively cheaply expanded using existing infrastructure if markets develop favorably. At the other end of the spectrum, a plant may also be mothballed or shut down if market conditions deteriorate.

To achieve this, we advise clients to test 10 to 20 of the core drivers of the value of an investment by defining all of the possible scenarios for each driver. Next, they should look at to what extent all of these factors are correlated.

Detailed modeling of investment cases will take more time and effort. However, in our experience, this extra work will not be in vain. A more rigorous review of an investment usually leads to higher returns in large part because

Executives can set their organizations apart from the rest of the pack by making investment decisions linked to overall strategic and portfolio goals

the increased transparency provides a better basis for discussions between the managers of business units who are proposing investments and top management. This allows executives to reshape an investment early on so that it will be more profitable.

## MOVING FORWARD

By developing the capability to manage investment decisions as part of an integrated system linked to overall strategic and portfolio goals, executives can set their organizations apart from the rest of the pack. Quantifying and assessing the specific risk-return characteristics of an

individual investment project, instead of relying solely on generic risk factors, will enable executives to recognize the investments that can make the biggest difference to the future of their organization long before their rivals will—when it is too late.

### PRACTICAL GUIDELINES FOR AN INVESTMENT APPRAISAL

- Model each large investment in a detailed cash flow model over the total lifetime of the asset. Shortcuts sometimes have larger, undesirable consequences
- Use a risk-adjusted weighted average cost of capital for the discount rate based on the relative impact of an investment on the cost of capital of each business unit as well as for the company's portfolio overall
- Model project-specific risks explicitly in the investment business case. Do not rely on generic risk factors to calculate the discount rate
- Focus on 10 to 20 key risks and value drivers. This number is normally sufficient to give you a good picture of the overall volatility of results

Johannes Schmitz, PhD, is a partner in the Global Risk & Trading Practice





# THE RISE OF SOVEREIGN RISK



# FINANCIAL INSTITUTIONS SHOULD PREPARE FOR MORE COUNTRY RISK PROBLEMS

BARRIE WILKINSON  
DAVID HOWARD-JONES

The global economy is now facing threats on several fronts. The most immediate danger relates to the continued deterioration in credit quality of many of the world's sovereigns. During the 25-year "Great Moderation" that ended with the onset of the financial crisis in 2007, sovereign risk was perceived to have been eliminated and the idea that a large developed nation could default on its financial obligations seemed far-fetched.

When the global financial crisis hit, government-led bailouts of the financial system combined with the need for increased public spending quickly took its toll on the credit-worthiness of the world's leading economies. Now, no sovereign can be considered truly risk-free—in fact, the whole concept of risk-free is starting to lose its meaning.

By bailing out the problems of insolvent institutions at the micro level, the various risk sources have now been

aggregated to a macro level, resulting in the level of systemic risk increasing dramatically. The focus of analysts and risk managers has therefore shifted from the analysis of individual companies to the analysis of macro-level and systemic risks. As such, the level of correlation across asset classes has increased dramatically, with the value of most investments being predominantly driven by a small number of systemic factors: the risk of a hard landing in China, instability in the Eurozone, and the likelihood that central bankers might pump more money into the system via quantitative easing.

More broadly, sovereign debt concerns remind financial institutions about the reality of "country risk" and the need to measure and manage it. Unfortunately, perhaps as a result of the recent experience of a long period without any sovereign problems, few financial institutions are well prepared to cope with the re-emergence of country risk.

Fortunately, country risk is not a new phenomenon. Reflecting on the various debt crises that preceded the recent period of stability, it is clear that there is valuable experience in the industry that can be built upon and many financial institutions do at least have a country risk framework in place. The nature of today's global economy, the proliferation of complex financial instruments, and the complicated nature of issues surrounding the Eurozone crisis means that these frameworks will, however, need to be extended if they are to cope with the scale of the country risk problems which appear to be coming down the pipeline.

## DEFINING COUNTRY RISK

In both regional and global financial institutions, strategic decisions cannot be made without considering the implications for country risk appetite. For example, an expansion strategy in a market may involve increasing the country limit. However, before a financial institution can set a risk limit for country risk, it must be able to define precisely what country risk is. Which risks are included

and which are excluded? If they get this step wrong then the institution is likely to estimate incorrectly its risk position with respect to various countries and the limits that are put in place might prove meaningless.

There are three varieties of country risk:

## 1. SOVEREIGN RISK

This refers to the risk that a sovereign entity will fail to honor its debt obligations. Sovereign risk is increasing dramatically at present because sovereign credit quality has declined in response to the global credit crisis. For banks, this risk is now further complicated by the fact that many institutions have direct exposure to sovereign risk in their banking book, investment portfolios, and trading portfolios, so the aggregate level of risk might not always be properly monitored.

## 2. TRANSFER RISK

This concerns to the possibility that a government will be unable or unwilling to make foreign currency available for remittance out of the country. Transfer risk exposures have increased dramatically with the growth of cross-border assets and international trade. In addition, the likelihood of transfer risk events is increasing as the imposition of

capital and foreign exchange controls might form part of the transitional solution when a troubled sovereign enters deep economic and political turmoil.

## 3. DOMESTIC MACRO-ECONOMIC CREDIT RISK

This is the risk of operating in a volatile domestic economic and political environment. Domestic risk is of particular importance to banks that have built up large regional or global strategies that require lending to foreign customers and, unlike transfer risk, arises even if the lending isn't done on a cross-border basis. This type of risk materializes when the local domestic economy goes through a major recession and loss rates on lending portfolios start to skyrocket. While this type of risk is a natural part of doing business in a country, it is important to consider that large concentrations in single countries can lead to major damage. So these portfolio concentrations also need to be managed via limits.

# ALLOCATING COUNTRY RISK EXPOSURES

Once the country risk management framework is established and the risk appetite and limits are set, exposures must be measured, monitored and managed. Among other challenges, this requires exposures to be allocated to countries and hence marked against country limits. For transfer risk, this task is not as straightforward as it may initially seem because modern corporate borrowers are rarely constrained by borders. A company may be incorporated in one country but have operational assets in, and derive revenues from, many other countries.

For example, BHP Billiton is incorporated in Australia but has assets across the globe, with about 25 percent of revenues derived from China. Should exposures to BHP Billiton be allocated as a transfer risk exposure against Australia only, based solely upon incorporation? It could be argued that China is also a "country of risk" for

allocation purposes, since China is more likely to impose exchange controls than Australia.

Financial institutions take a variety of approaches to allocating exposures which differ in their granularity, accuracy, and difficulty. Most opt for a simple approach, often justified by the ease of implementation. An alternative, but more conservative, approach involves allocating 100 percent of each exposure to all countries that contribute significantly to transfer risk. For example, if a borrower is incorporated in Vietnam and operates in China, a \$10 million loan to the borrower would result in \$10 million of transfer risk exposure in Vietnam and \$10 million of transfer risk exposure in China. This is clearly more conservative but avoids the chance that certain country exposures might fall through the cracks of your limit system.



## SCENARIO ANALYSIS AND CONTINGENCY PLANNING

There are clearly some large threats now looming on the horizon in the sovereign world, so it makes sense that companies should start considering the types of scenarios that might play out over the near and medium-term horizon, and the types of contingency plans that should be put in place to help prepare for these eventualities. The most obvious case in point is the modeling of potential end game scenarios for the Eurozone crisis.

The types of Eurozone scenarios that might play out are now widely written about in the press and include anything from the emergence of a stronger and more integrated Eurozone all the way through to a full-blown disintegration of the Eurozone at the other end of the spectrum. All manner of partial break-up scenarios, including combinations of PIIGS (Portugal, Italy, Ireland, Greece, and Spain) exits or even the exit of Germany, sit somewhere along this spectrum.

The more challenging part is to translate these scenarios into the relevant set of risk factor shocks and to consider the knock-on implications such as the collapse of a major bank or the issuance of new currencies. This assessment is then completed with an analysis of the micro impact of these shocks on your own balance sheet (and perhaps the balance sheets of your competitors and main counterparties).

The final step in the framework is to put in place a set of contingency plans to help cope with the period of severe stress that is likely to emerge under the more adverse scenarios. Exhibit 1 is an example of a list of the types of questions we might ask our clients when helping them think through their contingency plans.

If you haven't had a chance to go through such an exercise yourself then this will hopefully provide a useful starting point for the fire drill.

With the expansion of international trade, the globalization of financial markets and the deterioration of sovereign borrowers' credit quality, country risk is an increasing source of anxiety for any financial institution

with international operations. Unfortunately, the long period of economic stability prior to the recent crisis meant that few institutions invested in country risk management frameworks or the skills required to manage today's complex suite of challenges.

For institutions with material foreign exposures, this is a dangerous predicament which they should aim to quickly remedy. Many institutions are now investing in an overhaul of their country risk frameworks, making improvements to their data and measurement approaches. The real winners in the event of a major sovereign event however will be the ones that have used this enhanced information to reduce risks where appropriate and to make contingency plans to deal with the period of turmoil that follows.

### EXHIBIT 1: CONTINGENCY PLANNING CHEAT SHEET

- 1 Which legal entities are critical to a medium-term strategy, and which could, if necessary, be sacrificed?
- 2 What is the exposure to the peripheral sovereign debt to capital base ratio for each of the banks who provide your committed funding lines in terms of severe stress?
- 3 Which of your joint venture or distribution partners would not survive a major sovereign default? Could you continue to service customers without the joint venture partner?
- 4 If the investment banks closed their doors for three months and no new derivatives were available, how badly mismatched would you be?
- 5 What is the impact of a five percent rise in corporate tax in all non-peripheral European sovereign countries if it was implemented as an austerity measure?
- 6 What is the impact on solvency of all sovereign debt losing risk-free status and being treated in line with other unsecured credit for capital purposes?
- 7 How many of your systems can handle an entirely new functional currency switch overnight so that you could transact in "new lira" the day after redenomination.

Barrie Wilkinson is a partner in the Finance & Risk Practice. David Howard-Jones is a partner and Financial Services market manager for Australia and New Zealand



# IMPROVING THE MEASUREMENT OF CAPITAL ADEQUACY

THE FUTURE OF ECONOMIC CAPITAL AND STRESS TESTING

DANIEL COPE  
ANDY MCGEE



Over the better part of the last 20 years, banks have been developing credit risk economic capital tools to help measure and manage the risk and risk-adjusted returns of credit portfolios. But the recent financial crisis raised some significant questions about the effectiveness of the specific economic capital tools that many institutions used.

In 2008 and 2009, the Federal Reserve, ignoring banks' often poorly performing economic capital models, turned to a universal "stress test" to judge whether banks were adequately capitalized to survive losses in two scenarios: a continued economic downturn and one that significantly worsened. Banks' economic capital models could not answer this question. They could show what a future distribution of losses might look like, but not what losses might be in a specific economic scenario.

Stress testing has now become the primary lens through which banks and regulators assess capital adequacy. Banks have developed a new suite of stress testing models that link credit risk outcomes to macroeconomic variables. At the same time, banks have had to maintain

Most banks are now supporting distinct credit portfolio models. Instead, they should develop a more integrated economic capital and stress testing model.

and enhance existing economic capital models both for regulatory reasons and to support internal pricing and performance measurement tools.

This article examines the implicit choices that banks made in the initial development of credit risk economic capital models and why a different approach was needed for stress testing. We conclude by asking whether a more dramatic rethink of banks' modeling infrastructure is required to continue to enhance and evolve risk management capabilities.

## ECONOMIC CAPITAL MODELS AND THE EMERGENCE OF STRESS TESTING

In the late 1990's and early 2000's, there was significant debate over the optimal method of measuring credit risk economic capital, with two main competing approaches: Merton-based and econometric. While both sought to measure the same thing—a future distribution of possible portfolio values – the way in which they did so differed significantly. We summarize the most important differences between these two models in Exhibit 1.

At their simplest, econometric models use historical credit performance data to directly estimate the relationship between credit losses and macroeconomic variables. Merton-based models focus on the correlation of credit performance between obligors, and look to equity markets to help derive these correlations.

By the early 2000's, the industry debate about the modeling approach had subsided. The Merton approach emerged as the winner, largely due to the fact that few institutions had the historical data needed to properly fit an econometric model. The Merton approach and the closed-form derivative that was adopted in Basel 2 became the industry standard and provided further impetus for adoption.

While there are significant advantages to the Merton-based model, it has two important and related weaknesses as implemented by most institutions. First, because the parameters of the model are not consistently derived, economic capital is neither the best estimate for today (conditional) nor for a through-the-cycle estimate



EXHIBIT 1: DIFFERENCES BETWEEN THE MERTON AND ECONOMETRIC MODELS

|                                       | MERTON-BASED  | ECONOMETRIC  |
|---------------------------------------|---|--|
| UNDERLYING STRUCTURE                  | <ul style="list-style-type: none"> <li>Relies on the Merton structural model of default where a company defaults when the value of its assets falls below the value of its liabilities</li> <li>Joint default behavior is determined by relative correlations of each obligor’s asset value to a set of underlying factors</li> </ul> | <ul style="list-style-type: none"> <li>Relies on empirically-derived relationships between the default rate of a loan and a set of macroeconomic factors</li> <li>Relationships are defined by portfolio type and the loan’s rating or risk characteristics</li> <li>Joint default behavior is determined based upon the strength of observed relationship for each portfolio and the correlation of the macroeconomic variables that impact the different portfolios</li> </ul> |
| UNDERLYING FACTORS                    | <ul style="list-style-type: none"> <li>Asset value indices typically defined by industry and geography</li> </ul>   | <ul style="list-style-type: none"> <li>Macroeconomic variables</li> </ul>  |
| DERIVATION OF RISK INPUTS AND FACTORS | <ul style="list-style-type: none"> <li>Loan-level risk measures (e.g., probability of default, loss given default, and exposure at default) based upon bank’s estimates for each rating</li> <li>Correlations derived from equity markets for corporate loans and industry default histories for consumer loans</li> </ul>            | <ul style="list-style-type: none"> <li>Loan-level rating or risk characteristics input</li> <li>Probability of default and dependencies with macroeconomic variables jointly estimated</li> </ul>  |

(unconditional). It is a somewhat unintended hybrid between unconditional and conditional. Second, because the model is not directly driven by macroeconomic factors, it is difficult to draw precise connections between macroeconomic conditions and outcomes. In addition, it cannot directly forecast outcomes for a given macroeconomic environment.

The global financial crisis laid bare these drawbacks. The hybrid nature of the Merton-based model made it difficult to use. Was the model telling us how much capital we need today, or was it producing a long-term view? Perhaps more importantly, this model was inadequate to answer the most salient questions of the day: What will our losses look like over the next few years? And do we have enough capital to survive *this* crisis?

## A RETURN TO ECONOMETRIC MODELS

The crisis effectively forced banks down a new path, building models that directly answered the question, “In a specific stress scenario, what will losses be?” Because the focus of bank management, the Federal Reserve, and the market was on a downturn with definable paths, models that could produce macroeconomically-driven, conditional distributions were needed. This prompted the industry to return to the drawing board to develop a set of stress testing models that could accept macroeconomic scenarios and directly produce a set of forecasted losses—a return to the econometric modeling approaches.

While there is a wide range of stress testing models, tailored to specific portfolios and sub-portfolios, at their

core these models follow a similar structure. They define credit behaviors (transitions, roll rates, or defaults directly) as a function of both underlying loan characteristics and macroeconomic variables and they can produce a loss estimate for any macroeconomic scenario. The recent focus has been on using these models to produce point estimates of loss to answer stress testing questions, yet these models also allow us to produce a distribution of losses, given a distribution of macroeconomic scenarios. As such, these models could generate estimates of economic capital. In practice, few institutions are doing this today. The current infrastructure could not readily support such an application of the models.



As with any models, these stress testing models also have limitations. First, most banks still have only one cycle of relevant loan-level performance data to fit these models. There is inherent uncertainty around whether the relationships between macro factors and credit behavior will hold up in future downturns and in true tail events. Second, generating accurate point-in-time capital

estimates is dependent on the ability to create truly conditional macroeconomic scenarios—a model where the future paths (say, of house prices) are appropriately dependent on the current macroeconomic situation. This type of model would need to produce a more negative distribution of house price scenarios in 2006 than in 2010, a difficult modeling challenge.

## HOW THE BANKING INDUSTRY SHOULD MOVE FORWARD

Most banks are now supporting two sets of credit portfolio models: a Merton-based model used for economic capital and econometric models used for stress testing. Because stress test results are the binding constraint for capital management, economic capital has been relegated to secondary applications at most institutions such as high-level limit-setting and some commercial loan pricing, although with somewhat greater caution and overlays than before the crisis.

The financial crisis effectively forced banks down a new path, building models that directly answer the question “in this specific stress scenario, what will my losses be?”

Looking to the future, the path of least resistance is to maintain the status quo—continue to run Merton-based models for economic capital and econometric models for stress tests. Most institutions have gotten regulators and management comfortable with existing approaches, and change would be at a cost.

However, we think it is an important time to reconsider that path. The industry has learned a lot about what did not work well and has developed new analytics that could be further leveraged. An alternative to the current situation is an integrated economic capital and stress

testing model that uses econometric models. At the most basic level, an integrated platform would have the following elements:

- A macroeconomic scenario and simulation tool that generates or simulates all macroeconomic variables needed by the models
- A suite of econometric models (one for each portfolio) linked to the scenario generator that calculates loss rates for each scenario or simulation and can generate either loss estimates for a single specific scenario for stress testing or a distribution of losses over a wide range of scenarios for the purposes of economic capital

A modeling platform built in this way would have significant advantages over the existing situation. Because the model would be driven by a set of macroeconomic factors, economic capital would be substantially more intuitive and therefore more easily understood by business line management. The key assumptions driving capital levels (relationships of credit behavior and loss to macroeconomic variables) would also be more intuitive, and would allow institutions to more carefully test those assumptions. In addition, the model’s ability to simultaneously generate conditional expected loss and economic capital outputs has significant advantages for loan pricing.

Practically speaking, economic capital and stress testing would share a common platform and set of assumptions and would better leverage valuable resources. They would, however, face significant technology and analytical challenges in the current infrastructure.

The path of least resistance is for banks to maintain the status quo and to continue to run Merton models for economic capital and econometric models for stress tests. But we think it is an important time to reconsider that path.

Finally, this type of model would be a more valuable check on Basel 2 regulatory capital. Currently, differences between Basel 2 and economic capital are driven mainly by differences in correlation assumptions, which are the hardest parameters to estimate.

This path does have risks. It is not clear how these models will perform in more benign periods. And it is not known if they will produce reasonable levels of capital consistent with current requirements. As such it may be that we need unconditional or hybrid models in benign periods (when it is difficult to envision a truly stressful scenario) and conditional models in stressful periods (when, as it has been shown, unconditional models are often ineffective).

It is critical that we don't blindly accept the status quo. We need to use what we have learned through the crisis to build better and more useful tools that will allow the industry to better manage capital and price risk.

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**Daniel Cope**, manager in the Finance & Risk Practice, and **Andy McGee**, partner and head of the Americas' Finance & Risk Practice

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## CONDITIONAL OR UNCONDITIONAL MODELS?

When building economic capital models banks must decide between conditional and unconditional approaches. A conditional model produces both an expected and tail loss that is based upon current macroeconomic conditions. An unconditional model does not depend on the current macroeconomic environment, and as such produces more stable outputs over time. A well-functioning conditional model is responsive to the credit cycle, meaning that economic capital rises in good periods when risk is building and starts to fall (relatively) in bad periods as losses get realized.

For a model to be fully conditional, all parameters need to be conditional. Merton-based models typically allow users to input their own probabilities of default and loss given defaults and thereby specify the degree of conditionality of these parameters, although banks take a through-the-cycle view. Correlations are typically derived from equity market returns over the recent past, an approach that is neither conditional nor unconditional.





# LET'S STICK TOGETHER

HOW RISK MANAGERS AND BANKERS  
CAN LEARN TO GET ALONG

MICHELLE DAISLEY  
JOHN-PAUL PAPE

People marry because they recognize that being together makes them stronger, happier, and more prosperous than they would be alone. Yet they remain two individuals, with differing needs, goals, values, and priorities. A long-term partnership is a delicate balancing act that requires hard work and mutual respect to last. If the couple loses respect for each other, if the power balance becomes tilted too heavily in favor of one side for too long, or if they get caught up in a cycle of destructive arguments, things end in a messy breakdown with unpleasant consequences for everyone.

The relationship between a bank's front-line staff and its risk and control functions is like a marriage. The partners share high-level goals (the profitability and sustainability of the institution they work for) but have different short-term objectives and priorities. The front line seeks to maximize profitability, while the risk and control functions aim to ensure that risks remain within the appetite of the institution.

When a relationship is good, both parties flourish. Mutual respect and shared values carry partnerships through the hard times. Many of the financial institutions that came through the financial crisis in relatively good shape cite their robust risk culture as a reason for their survival.

But when a relationship breaks down, the results can be catastrophic. Post-mortems of institutions that failed during the recent financial crisis frequently cite a dysfunctional relationship between the front line and the risk management function as an important cause.

The culture of an institution can be difficult for a board member, CEO, or senior manager to understand, especially at complex, heterogeneous, international financial institutions

Regulators and industry commentators are therefore paying more attention to the relationship between an institution and its risk management framework, often expressed as the "risk culture." Risk culture is a shared understanding of the bank's attitude, approach, and preferences for risk and control. It concerns the culture of the entire bank—well beyond the risk management function. It is also increasingly a consideration in regulatory reviews and assessments.

As with a dysfunctional romantic relationship, a broken risk culture exhibits clear signs. There can be an imbalance of power; one side of the partnership (risk or the business) becomes too powerful for too long. A cycle of destructive arguments takes root. Or repeated compliance, policy, and risk breaches, regulatory fines, or operational loss events occur.

The culture of an institution can be difficult for a board member, the chief executive officer, or senior managers to understand and articulate, especially at large, complex, heterogeneous, international financial institutions. Even if it can be understood, it can be hard to bring about cultural changes. It takes more time and effort to change hearts and minds than to change an organizational chart, control policy, or information technology system.

Many financial institutions have therefore undertaken to better understand the strengths, vulnerabilities, intricacies, and complexities of their risk culture, asking questions such as, "What are the implications of maintaining the status quo?" and "What changes need to be made?"

Several tools can be used to investigate the risk culture of an institution. An online survey can collect opinions from staff across the business, operations, and control function teams. Multiple choice questions assess attitudes and behaviors, test respondents' understanding of control roles and responsibilities, and how effectively the different teams operate and interact. Attitudes and perceptions are tested from several angles by using different questioning techniques, and space should be provided for respondents to provide more detail in their own words.

But a survey alone does not provide sufficient insight for a proper diagnosis. Focus group workshops and interviews with senior managers should also be used to drill into the survey results, discussing real-life examples of identified, underlying causes, and potential solutions. Focus groups typically comprise 8 to 12 members of staff of similar levels of seniority, with representation from all of the business, operations, and control function teams. Case studies can also be used to discuss what should happen and what actually does happen, not under testing, but in realistic business scenarios.

While each institution is unique, some common types of inadequate risk cultures include:

1. **Revenue driven** At one wholesale bank, the culture was to maximize revenue and volume, regardless of profit and risk. This was driven by aggressive revenue and volume targets set by senior managers. Risk was seen as a pure control function, considered a nuisance by the front office, and frequently overruled by senior managers. There was an unhealthy degree of conflict between the front office and the control functions and a lack of respect for risk limits and other controls, resulting in regular compliance breaches and a high-risk portfolio.
2. **Risk-adjusted profit driven** At another wholesale bank, strategy and targets were articulated in terms of profit maximization, with risk included as a cost. For example, the cost of capital was included in profit metrics and compensation calculations. However, this policy was poorly adhered to, with an endemic culture of gaming risk metrics by challenging risk models and assumptions. As a result, the actual level of risk taken was frequently higher than assumed, and when losses occurred this caught management by surprise.
3. **Loss avoidance at all costs** At a domestic universal bank, there was an engrained conservative culture toward risk, with an all-powerful and old-fashioned chief credit officer whose mantra was “we don’t do risky business.” The conservative culture was viewed with pride as a key survival factor during the crisis. However, the conservatism and power of the risk management function also stifled business growth and innovation, resulting in returns that were below expectations, even when adjusting for the low risk of the portfolios. Morale fell among the more creative and ambitious business line staff, resulting in high turnover of stronger performers.
4. **Head in the sand** Another universal bank was so proud of its conservative risk culture and history that it devoted little effort to maintaining it. While core parts of the business were well understood, other parts were taking large risks, unbeknownst to the leadership team. Underinvestment in risk data systems, tools, and infrastructure compounded the problem. Managers and investors were surprised by significant losses from one of the non-core business lines.

Having identified the root causes and drivers of weaknesses of an institution’s risk culture, its leaders should articulate a target risk culture and develop a plan for change, which may take some years to achieve. Five risk culture levers can be pulled by management:

1. **Leadership, strategy, vision, and values** Statements of mission, strategy, values, and risk appetite should be aligned with one another, and consistent values and behaviors must be observable at the top. Communications from senior managers to staff should be clear and consistent, combining broadcast messages with team-specific messages, so that staff members understand what institution-level goals and values mean for them and can translate them into changes in their daily actions.

2. **Organizational structure and governance** From the formal structures people work in (reporting lines, committees, role descriptions, decision rights, etc.) to informal behavioral traits (such as partnership, inclusion, and collaboration), governance frameworks should be evaluated and sometimes changed to support the desired culture.
3. **Policies, processes, tools, and data** The policy framework should be clear, comprehensive, and consistent. It should be communicated and accessible to relevant staff so that no one can claim that they are not aware of the rules. Processes with clear roles, responsibilities, and deadlines reduce conflicts and frustrations. Robust tools and data are required to monitor the risk position and compliance behavior to enable rapid identification and escalation of issues.
4. **Targets and performance management** Personal objectives, targets, and performance management tools are the best way for managers to set expectations for employees. Aligning incentives with cultural values rewards the desired behavior, and setting meaningful and proportionate penalties for risk or compliance breaches discourages bad behavior. Ambiguous and overly long lists of targets should be avoided.

5. **Employee hiring, direction, and development** A high-performance culture helps attract, grow, and retain talented staff, reinforcing business success and risk awareness. Cultural messages and priorities therefore need to be embedded in messages delivered to staff through all human resource processes, including recruitment, training, on-boarding, and promotion decisions.

With the right relationship counseling, and effort on both sides, even broken relationships sometimes have a happy ending. Both sides can overcome their differences, regain respect and trust, and work together in an effective partnership.

The course of true love never did run smooth.

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**Michelle Daisley**, senior manager, and **John-Paul Pape**, partner, are in the Finance & Risk Practice  
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# INTERNAL TRADING BOOK MODELS UNDER THREAT

# A FUNDAMENTAL REVIEW PROPOSED BY REGULATORS WILL ONCE AGAIN REWRITE THE RULES FOR TRADING

BARRIE WILKINSON

Internal models lie at the heart of most risk management frameworks. They also lie at the heart of many of the problems we witnessed during the financial crisis. The use of quantitative models was taken to the absolute extreme in the modeling of trading products at major investment banks. Their failure is now a valuable case study on why over-reliance on models can be damaging.

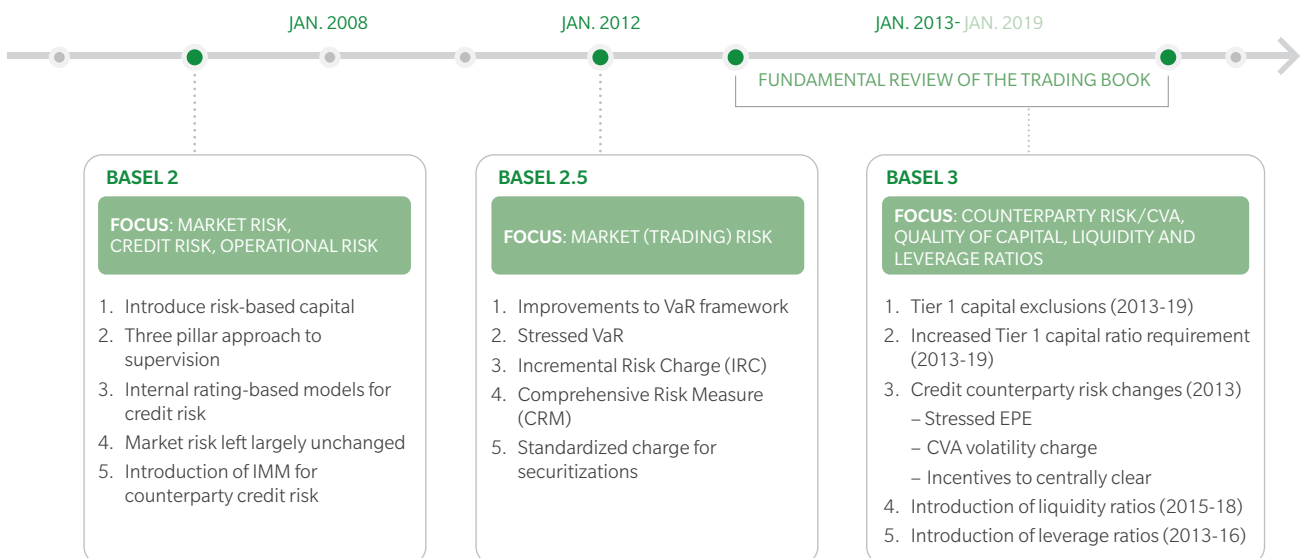
A new paper from the Basel Committee—who ordain banking regulations globally—calls into question the role of internal models in setting trading book capital requirements. This article looks at the likely impact of

these new proposals and argues that quantitative risk analysis should continue to be the key driver of capital requirements within the trading book. Regulators should be careful not to throw the baby out with the bathwater.

## HISTORICAL CONTEXT

The trading books of large international banks were among the most significant symbols of failings in risk management practices during the recent financial crisis. In particular, the well-established practices for measuring market risk, built upon the concept of Value-at-Risk (VaR), were found severely lacking. While banks invested greatly in systems and models prior to the crisis, it was often the case that risk management departments were treated as the poor cousin to the front office when it came to handing out information technology budgets. The brightest “quants” in risk departments were often poached by the front office and, perhaps most worryingly, risk managers often lacked the clout necessary to confront traders who were taking excessive risks.

EXHIBIT 1: FUNDAMENTAL REVIEW OF THE TRADING BOOK (CURRENTLY UNDER CONSTRUCTION)





Under the current regime it is not too much of a simplification to say that the capital held against market risks in the trading book is just a multiple of the VaR number (a technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities) that banks produce with their own internal models, with a few additions to this number to cover other specific risks. However, these capital numbers have not back-tested well in light of the large losses experienced during the crisis. The typical VaR-based regulatory capital held against trading positions for large banks was measured in hundreds of millions of dollars, whereas most large banks experienced multi-billion dollar losses during the height of the crisis, and in some cases multiples of tens of billions. While banks can argue that the severity of the financial crisis caught

There is a general sense among our clients that the “Fundamental Review” could be a much bigger deal for the industry than Basel 2.5 and Basel 3

everyone (including regulators) off guard, it is also true that some banks have continued to be caught out by very large losses in their trading portfolios, even though they have since had several years of crisis data upon which to recalibrate their models.

## REGULATORY RESPONSE

Regulators have naturally reacted in a very heavy-handed way to these failings, and the trading businesses of banks are now being hit by wave upon wave of new regulations.

The latest comes in the form of a consultative paper from the Basel Committee, entitled “The Fundamental Review of the Trading Book,” which closes for comments in September. Despite the major post-crisis changes already

introduced, this new proposal aims to make sweeping changes to the way risks are measured and managed in the trading book. There is a general sense among our clients that the “Fundamental Review” could be a much bigger deal for the industry than Basel 2.5 and Basel 3, particularly in terms of the amount of effort that will be required to comply with the proposed changes.

## THE SHORTCOMINGS OF VALUE-AT-RISK MODELS

With hindsight it is clear that VaR is an incomplete metric. It doesn't capture the full spectrum of risk factors that drive profit and loss (P&L) volatility in a typical trading book. There is a long list of risks that caused major losses during the crisis such as basis risk, correlation risk, gap risk, and market liquidity risk, which were not adequately captured in VaR models.

One of the other major problems is that the volatilities in most VaR models are calibrated from only one or two years of historical data. This means that a benign period of low volatility can give the impression that the risk in the portfolio has dropped to a very low level, which allows banks to take much larger positions without needing to hold a great deal of capital against it. In others words, VaR models tend to drive the leverage of the portfolio up during boom periods, which increases the scale of the losses when a crisis hits.

## EXHIBIT 2: INTERNAL CONFIDENCE LEVEL AND HOLDING PERIOD FOR VAR ASSUMPTIONS OF MAJOR INVESTMENT BANKS

| INSTITUTION     | CONFIDENCE LEVEL | HOLDING PERIOD FOR VAR |
|-----------------|------------------|------------------------|
| RBS             | 99%              | 1 day / 10 day         |
| BNP Paribas     | 99%              | 10 day                 |
| HSBC            | 99%              | 1 day                  |
| Credit Agricole | 99%              | 1 day                  |
| Citigroup       | 99%              | 1 day                  |
| Deutsche Bank   | 99%              | 10 day*                |
| UBS             | 99%              | 10 day †               |
| Barclays        | 95%              | 1 day                  |
| JPMorgan Chase  | 95%              | 1 day                  |
| Goldman Sachs   | 95%              | 1 day                  |

Source: Annual report (as of April 2012)

\* For regulatory reporting; different parameters used for other applications

† For calculation of regulatory capital; different parameters used for other applications

Another flaw in the model is that it assumes a short holding period on the basis that trades could be exited or hedged within a ten-day timeframe. Risks that might materialize beyond this ten-day holding period are completely ignored. When market liquidity evaporated during the crisis, this assumption was found to be seriously lacking, with banks being forced to sit on toxic positions for long periods as losses accumulated. Exhibit 2 shows the internal confidence level and holding period assumptions of some of the major investment banks. Banks using a one-day holding period would need to switch to a ten-day holding period for regulatory reporting purposes.

Finally, there is a long list of issues related to the credit risks that have started to become a driver of market risk. These include credit value adjustment (CVA) risk on derivatives, default and migration risk on bonds and credit default swaps (CDS), as well as all the peculiarities of the various tranching products in the structured credit world.

## A RECAP ON BASEL 2.5 AND BASEL 3

### BASEL 2.5 (MARKET RISK AMENDMENTS)

Basel 2.5 was the initial attempt to address the weakness in market risk measurement in the trading book. These regulations introduced an Incremental Risk Charge (IRC) for traded credit instruments to cover default and migration risk for CDS, loans, and bonds.

The concept of stressed VaR was also introduced to eliminate the pro-cyclicality in the trading book (whereby capital requirements fluctuate with the economic cycle) and to keep stress events from dropping out of the historical data window too quickly. Under this new approach, banks calculate VaR based on a stressed observation period (typically spanning the Lehman stress period). VaR and stressed VaR are then added together to form the basis for the market risk capital requirement.

Given the difficulty in modeling securitized products, Basel 2.5 also forced banks to move to a more punitive

standardized charge with the introduction of increased risk weights for re-securitizations such as collateralized debt obligations squared. This single regulation alone has led to large swathes of the structured credit business at investment banks becoming unviable from a return-on-capital perspective.

### BASEL 3

The parts of Basel 3 that affect the trading book come into effect at the start of 2013 and focus mainly on counterparty risk and CVA in the derivatives portfolios. Banks that use internal models for measuring the credit exposure profiles of derivatives will be required to calibrate these models on a stressed observation period (analogous to stressed VaR). CVA P&L volatility will be captured by a new CVA VaR measure, which is expected to have a major impact on the economics of derivatives businesses.



## THE FUNDAMENTAL REVIEW OF THE TRADING BOOK

In spite of all the work already done under Basel 2.5 and Basel 3, a more fundamental review of the trading book is still required. These new proposals will likely require a great deal more work for banks than Basel 2.5 and Basel 3 combined, given the need to fully overhaul the way that both VaR and the standardized calculation are performed.

The most worrying proposal in the paper is that the Basel Committee is considering implementing a standard “floor” for any bank using an internal model. As discussed earlier, this potentially undermines the business case for banks building or maintaining internal VaR models going forward. While it’s understandable that regulators prefer the simplicity of the standardized rules, we are concerned about the perverse incentives that arise from the use of floors.

The use of floors has a tendency to make capital requirements insensitive to the risks being taken and offers a lack of incentive to hedge positions. Moreover, most leading banks don’t currently have the ability to calculate the standardized approach for large portions of their portfolio, so it will require a significant investment if banks need to calculate it for their entire book.

The new proposals also aim to revise the definition of the trading book boundary. There are two alternatives being discussed. One proposal is to move all fair value instruments into the trading book, which would lead to an enlarged definition of the trading book. This could then

lead to large increases in regulatory capital to cover, for example, a bank’s investment portfolio. The alternative “trading evidence” based approach is likely to require a large amount of extra effort to document the evidence and would probably lead to shrinkage of what is included within the trading book.

**Risk management departments were often treated as the poor cousin to the front office when it came to handing out IT budgets**

It looks likely that regulators will push to have model approvals granted or removed at an individual desk level rather than at the entire trading book level. The shift will greatly increase the cost of compliance. The related proposal to limit the benefits of diversification across desks will lead to further increases in capital requirements.

The new regulations also propose differentiating the liquidity horizon for different products so that each product will have a liquidity horizon somewhere between ten days and one year, rather than all products using ten days as discussed earlier. Again, compliance will require a major effort for banks to collect the data to justify these liquidity horizon assumptions.

## CONCLUSION

If risk managers of the trading book thought they might be able to take some extended vacation once they complied with the Basel 3 deadlines at the end of this year, they were wrong. It now looks like they will need to push that vacation back a couple of years as they prepare for the next wave of regulatory work. This new wave coming out of the Fundamental Review is likely to be the toughest

challenge to date, and like Basel 2.5 and Basel 3, is likely to have a big strategic impact on the way banks are setting up their trading businesses.

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**Barrie Wilkinson** is a partner in the Finance & Risk Practice  
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# THE DAWN OF A NEW ORDER IN COMMODITY TRADING

THE INDUSTRY IS ABOUT TO UNDERGO  
ITS LARGEST TRANSFORMATION IN 30 YEARS

STEVEN MEERSMAN  
ROLAND RECHTSTEINER  
GRAHAM SHARP

It is difficult to open a newspaper without reading about another multi-billion dollar deal by a previously unheard of commodity trader. Baar-based commodity trader Glencore International recently bought the Calgary-based global food ingredients company Viterra Inc. for \$6 billion, just months after announcing a nearly \$80 billion merger with Zug-based mining giant Xstrata. Not long before that, Glencore raised \$10 billion in the largest initial public offering of 2011.

We predict there will be many more commodity trading acquisitions, investments, public offerings, and new entrants as the industry establishes a formidable global asset footprint for the future. These developments, combined with the long-term trend of rising commodity prices and financing costs, will force the industry through its largest transformation in 30 years.

This industry shake-up underscores how the rules guiding the commodity trading industry are being rewritten. In the 17th century, the success of traders such as the Dutch East India Company and Arab Silk Route merchants was based on intricate knowledge. Traders could earn rich profits if they knew the route from producers to end consumers, the exact value of commodities at each location, and if they could manage the logistical challenge of bringing their goods to market. But that is no longer

# \$80 billion

The announced value of a merger between commodity trader Glencore International and mining giant Xstrata

a recipe for success in a world of easily accessible and reliable information.

Today's top commodity traders are masters of "optionality." These traders prosper because they can pay producers more than end users can while selling commodities more cheaply to end consumers than producers can afford. Traders do so by carefully managing a range of options in relation to the time, location, quality, lot size, and logistics of sourcing or delivering their precious cargoes. They exploit the options inherent in their portfolio of purchase and supply contracts. That's something producers and end users are often unable or unwilling to do.

## SMOOTHING OUT SUPPLY AND DEMAND IMBALANCES

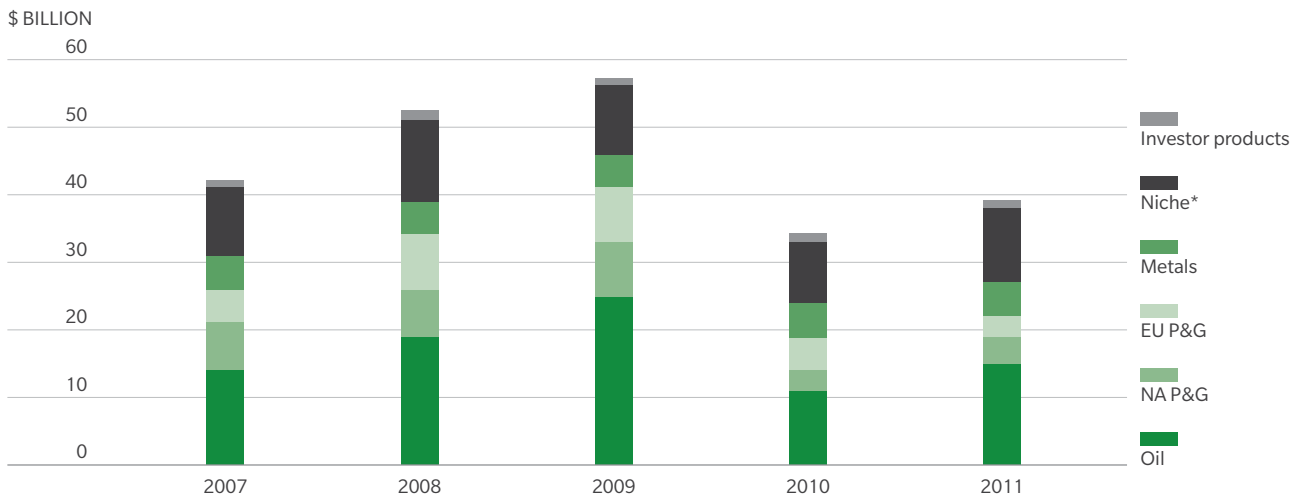
Put another way, traders make the vast majority of their income by smoothing out imbalances in supply and demand, not from speculation or high prices. A steadying hand for world markets may not be the first image that comes to mind regarding commodities traders. Yet given their logistical network and inventory reserves, they are frequently the ones best able to correct a shortage or other imbalance.

Indeed, our research shows that commodity traders earned 35 percent less in revenues in 2010 than they did in 2009, even though commodity prices were higher.

(See Exhibit 1.) As commodity prices remained relatively stable at high levels until the end of that year, traders had less capital to buy and sell commodities and fewer opportunities to smooth out imbalances.

Competition is increasing, as more commodity producers, traders, and end consumers angle to capture what we call the "total value of optionality." This is defined as the combination of the absolute value of the commodity, the volatility of its price, and the frequency and magnitude of events that disturb the dynamic equilibrium of the commodity's markets, so-called grey swan events.

### EXHIBIT 1: TOTAL COMMODITIES TRADING GROSS MARGINS



Source: Oliver Wyman proprietary data and analysis, annual reports, investor presentations, market interviews  
 \* Includes LNG, coal, emissions, agricultural commodities

Competition across this value chain varies greatly by commodity. In the oil market, there are a large number of producers, traders, and end consumers. As a result, Exxon Mobil, the largest non-national energy producer, has only a 3 percent share of world production. That is very different from some mineral markets, where a trio of large producers such as Melbourne-based BHP Billiton, Rio de Janeiro-based Vale, and London-based Rio Tinto Alcan account for more than 70 percent of annual output.

But it is becoming increasingly apparent that size matters across all physical trading markets. Whoever reacts fastest when grey swans appear has the best opportunity to capture a profit. Consequently, traders need global coverage both to see all of the options that may exist in a particular commodity stream, and to be able to react swiftly to grey swan events wherever they occur.

## DEVELOPING A GLOBAL FOOTPRINT

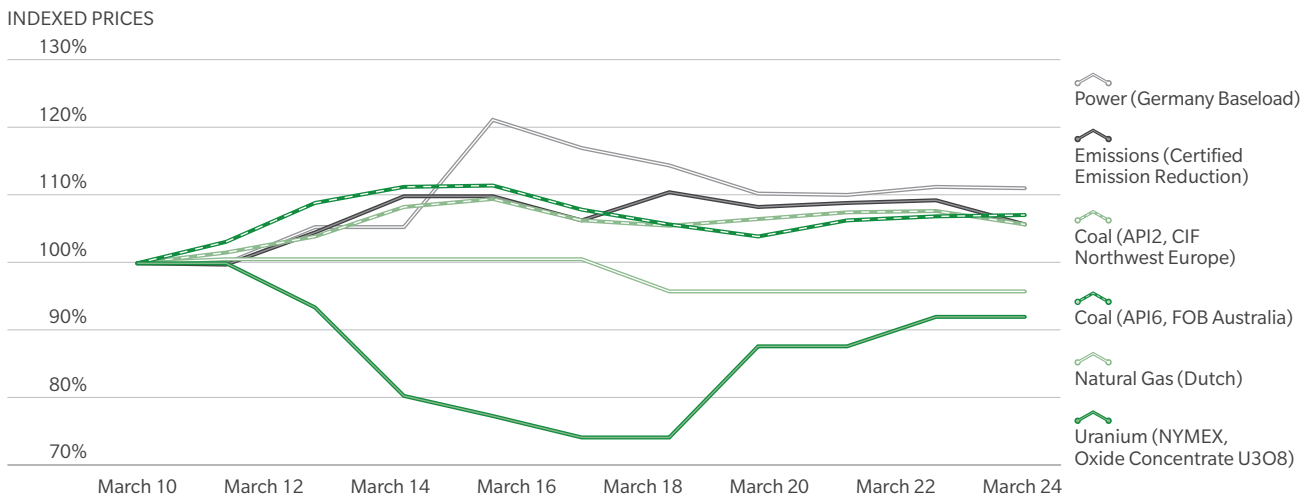
To understand the importance of developing a global footprint, consider what happened when the earthquake and tsunami hit Japan in quick succession in 2011, causing a nuclear plant in Fukushima to fail. As soon as the nuclear plant faltered, gas prices skyrocketed. Gas-powered plants had to substitute for nuclear power generation, causing local gas shortages to drive up prices more than 30 percent within a week.

Regional traders holding limited natural gas inventories in Japan could not muster as much volume as global commodity trading giants like the Cyprus-based oil and energy trading company Gunvor Group, which had access to liquefied natural gas cargoes spread across the world. Regional traders had only one option: to buy local gas, for which the price had already increased. Gas prices stopped rising and slowly returned to a normal range of less than 110 percent of pre-Fukushima failure levels only after global commodity traders stepped in and re-routed liquefied natural gas shipments to the import-dependent island. (See Exhibit 2.)





EXHIBIT 2: SELECT COMMODITY PRICES AFTER FUKUSHIMA DISASTER (MARCH 2011)



Source: Bloomberg

Traders’ reaction speeds depend on their access to readily available inventory and logistical assets. But as traders invest in new logistical assets to secure a wider range of options globally, they need to bear in mind that each of these assets has different requirements—especially in terms of the talent necessary to run them profitably.

Different types of logistical assets also provide different advantages. For example, storage capacity allows players to react to sudden shortages by quickly drawing on inventory. (See Exhibit 3.) Traders can capture extra margins from previously stored product in a rising price environment. Port terminals provide access to regional markets and allow their owners to extract value by breaking up large tanker-sized cargoes into smaller quantities fit for domestic distribution to end consumers.

Refineries offer even more optionality by allowing traders to change the production mix of different products. For example, they may switch the crude oil consumed between sources from different geographies.

Traders used to obtain access to these assets mainly through long-term agreements for a portion of the assets’ available capacity. Now that many commodity traders have grown, they have ramped up their direct investments in larger existing projects or new ones such as terminals and refineries.

Each of these assets also comes with its own set of requirements. Refineries, for example, are an order of magnitude more expensive than storage tanks.

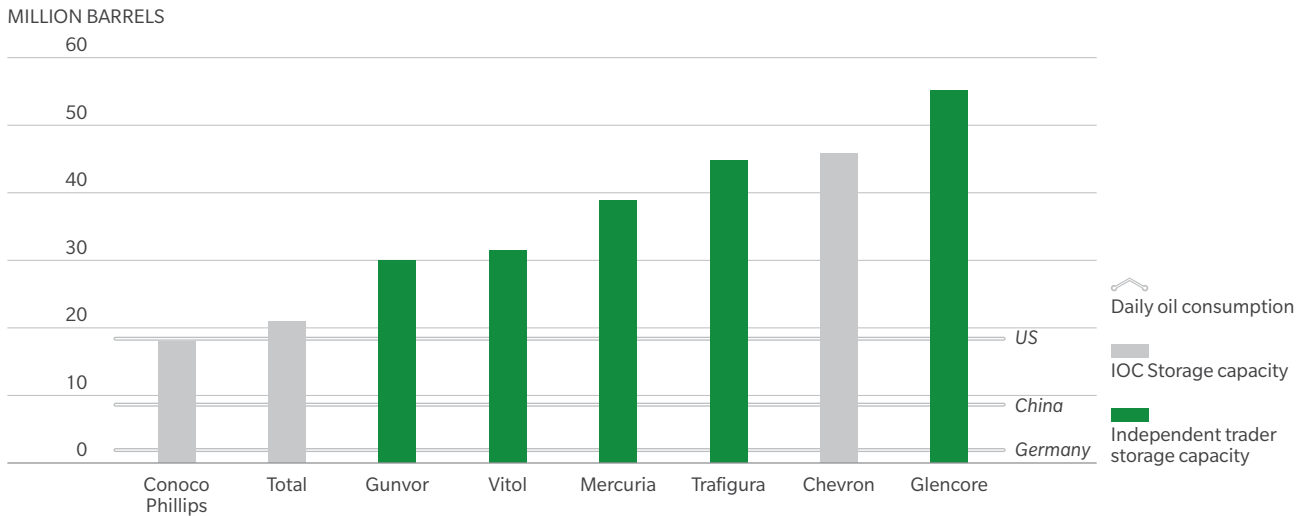
Recruiting and retaining talent is also critical. Managing refineries profitably requires a specific skill set. Training people to become successful traders can take more than five years as they learn the dynamics of the market and how to take advantage of the wide range of options available in their company’s portfolio.

Recent and pending regulatory changes requiring lending institutions to hold higher capital reserves are causing the cost of financing for the whole industry to increase at a time when traders are making more and larger investments. As a result, several European banks active in commodity trading, such as Crédit Agricole and Santander, closed their commodity trading arms recently. Others, such as Goldman Sachs, are moving away from cash-intensive financial trading into more physical trading.

Some traders are starting to tap third-party capital through strategic partnerships to fund their investments. For example, Rotterdam-based energy trader Vitol joined funds with London-based private equity firm Helios to take over Den Haag-based energy major Shell’s downstream businesses in Africa in 2011. Another investment firm, Brussels-based Atlasinvest, partnered with Vitol to buy a European refinery from the insolvent independent refiner Petroplus.



EXHIBIT 3: OIL AND PRODUCTS STORAGE CAPACITY FOR SELECTED PLAYERS



Source: Oliver Wyman

Commodity traders’ compensation packages are typically equity-based, with senior staff building up sizeable equity stakes over time. Making traders’ compensation mostly variable and based on long-term performance ensures

loyalty by aligning traders’ goals with their companies’. It also encourages traders to keep the long-term performance of the business in mind and not to put the entire enterprise at risk.

MASTERING OPTIONALITY

When traders move commodities between producers and end consumers, they use a complex web of logistical assets, guaranteed supply contracts, and long-term purchasing agreements. Those that make the best decisions across this system are able to provide a service to the market and generate the largest profit. To do this, traders take advantage of several options related to the time, location, quality, lot size, and logistics of sourcing or delivering their precious cargoes. Below are some examples of how this is done:

**TIME** Californian gasoline is a unique blend of gasoline produced only by local refineries in the geographically isolated Californian market. It typically trades at a premium to the New York gasoline contracts on NYMEX, though the size of the premium varies daily and seasonally. When current and future demand expectations are simultaneously low, which often occurs in winter, a trader may decide to buy gasoline and put it into storage in California until the summer. Simultaneously, the trader will sell the New York gasoline future contract on NYMEX to hedge against price movements in the overall price of gasoline. The trader

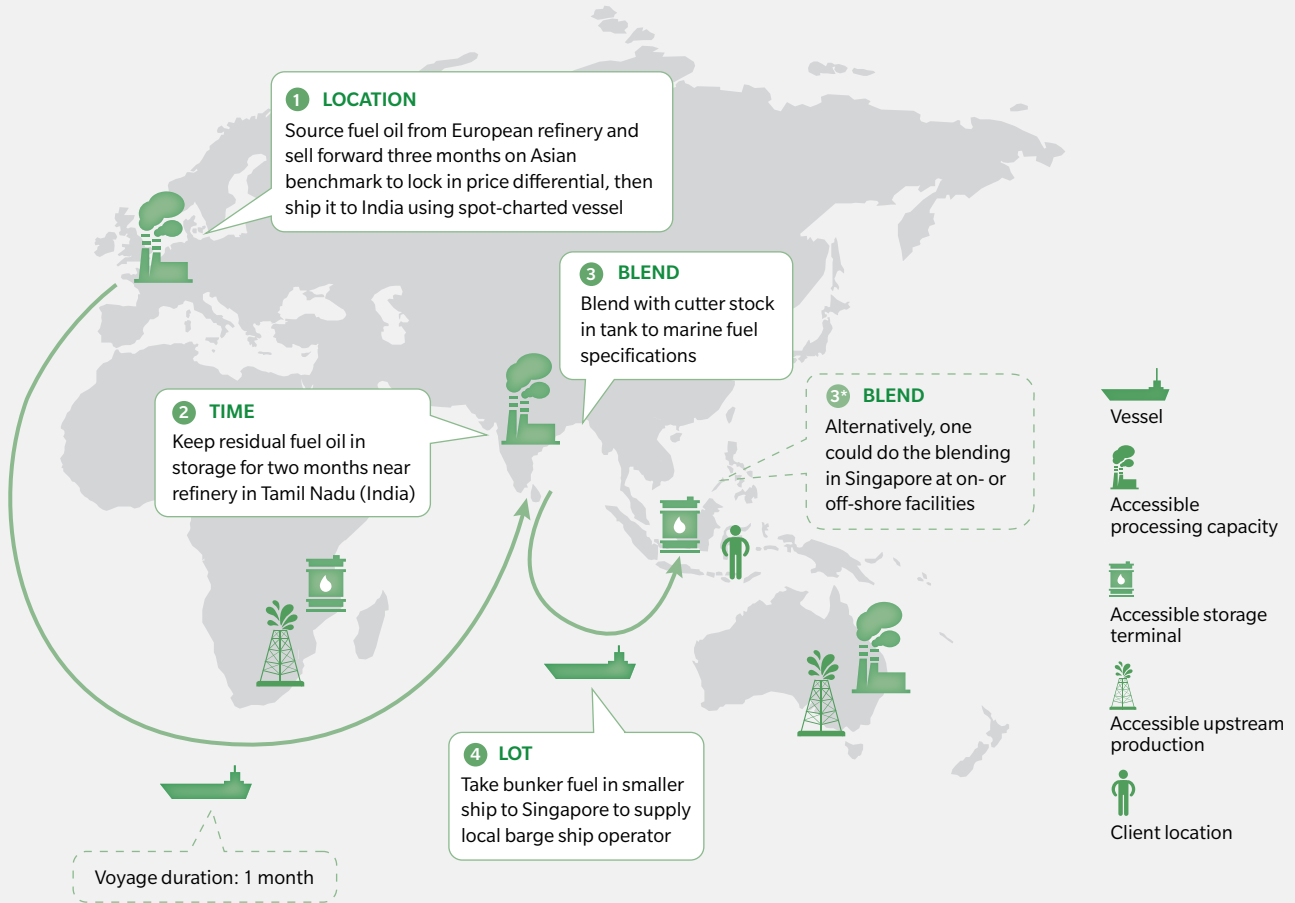
profits when spreads between the Californian and New York variety widen.

**LOT SIZE** Imagine a copper smelter that requires copper in bi-weekly 42,000 ton deliveries. Its nearest and cheapest copper ore-exporting port can only supply 10,000 tons. A trader might be able to accommodate the smelter by bundling multiple small cargoes, and delivering them to the client while charging a service fee for handling the logistics.



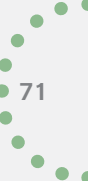
MAP OF COMMODITY TRADING OPTIONS

THIS IS THE PATH ONE COMMODITY TRADER SELECTED FOR A TRADE AFTER CONSIDERING MANY DIFFERENT OPTIONS



**LOCATION** Nigerian crude oil commands a premium price above equivalent crude oil of Libyan origin. The Libyan crude is mostly delivered to Italian, Spanish, or French refineries that were designed to process it. Nigerian crude, by contrast, can be shipped to China, India, Europe, and the Americas. As a result, the market price is linked to the maximum price present across all of these markets, after accounting for the different logistical costs. Traders have more flexibility depending on where they sell and how they price the Nigerian crude oil, based on the supply-demand dynamics in the individual regions.

**QUALITY** Around the world, there are different standardized contracts for grain. Detailed ranges of characteristics such as hardness and protein content determine which grain can be sold under which contract. These contracts trade at different prices. By blending small amounts of high-quality grain with grain of lesser quality, traders can increase the percentage of the harvest that meets the contract trading currently at a premium and make a profit.



## FINDING A NEW APPROACH TO FUNDING

As their operations and balance sheets grow, traders need a new approach to funding. Since large investments tie up precious capital for a long period of time, commodity traders' growing financing requirements are increasingly at odds with both their ownership structures and the high-volume turnover nature of their business. Trading is a low-margin activity. Consequently, traders need large amounts of financing to turn over as much volume as possible to fund inventories and to invest in logistical networks.

The trouble is that traders' financing costs are steep. With large amounts of debt and relatively small asset bases, traders cannot rely on a credit rating to secure financing in the capital markets directly. Instead, they often use their inventory as collateral for financing agreements or rely on short-term transaction-based financing tools to grow their turnover. This short-term financing structure makes investing in essential logistical assets very expensive.

Employee-owned traders are opening up to attract new sources of capital by going public, issuing bonds, and selling minority stakes in their assets to logistical companies and sovereign wealth funds. Amsterdam-based independent commodity trader Trafigura sold a 20 percent stake in its downstream business to the sole concessionaire for oil and gas exploration in Angola, Sonangol, in 2011. A year earlier, Vitol sold a 50 percent stake in its terminal business to a Malaysian shipping conglomerate. Energy trader Mercuria Energy Group is currently in talks to sell a 20 percent stake of its company and expects to reach an agreement similar to the one struck by Vitol by the end of the year for its processing and terminal assets. Similarly, we have seen sovereign wealth funds, such as Singapore's

Temasek and GIC, investing in grain traders like Singapore-based Olam and New York-based Bunge.

While going public can provide an alternative source of financing, it is sometimes difficult for traders to reconcile shareholders' expectations with the inherently volatile nature of trading. For example, shareholder expectations of steady quarterly earnings and tight management of debt can limit the flexibility required for a trading organization. Glencore's management of this delicate balance will be essential to its future success.

When traders move commodities between producers and end consumers, they use a complex web of logistical assets, guaranteed supply contracts, and long-term purchasing agreements

The short-term focus of a shareholder can also hamper the long-term view often required in trading. A good example of this is the crisis in the metal markets during the late 1990's and early 2000's. Low demand, low prices, low volatility, and huge competition among traders during this period resulted in shrinking margins and losses. Yet players that built up relationships to access assets nimbly during this time reaped rewards later, when Chinese growth increased demand, prices, and price volatility in a market with relatively little competition remaining.

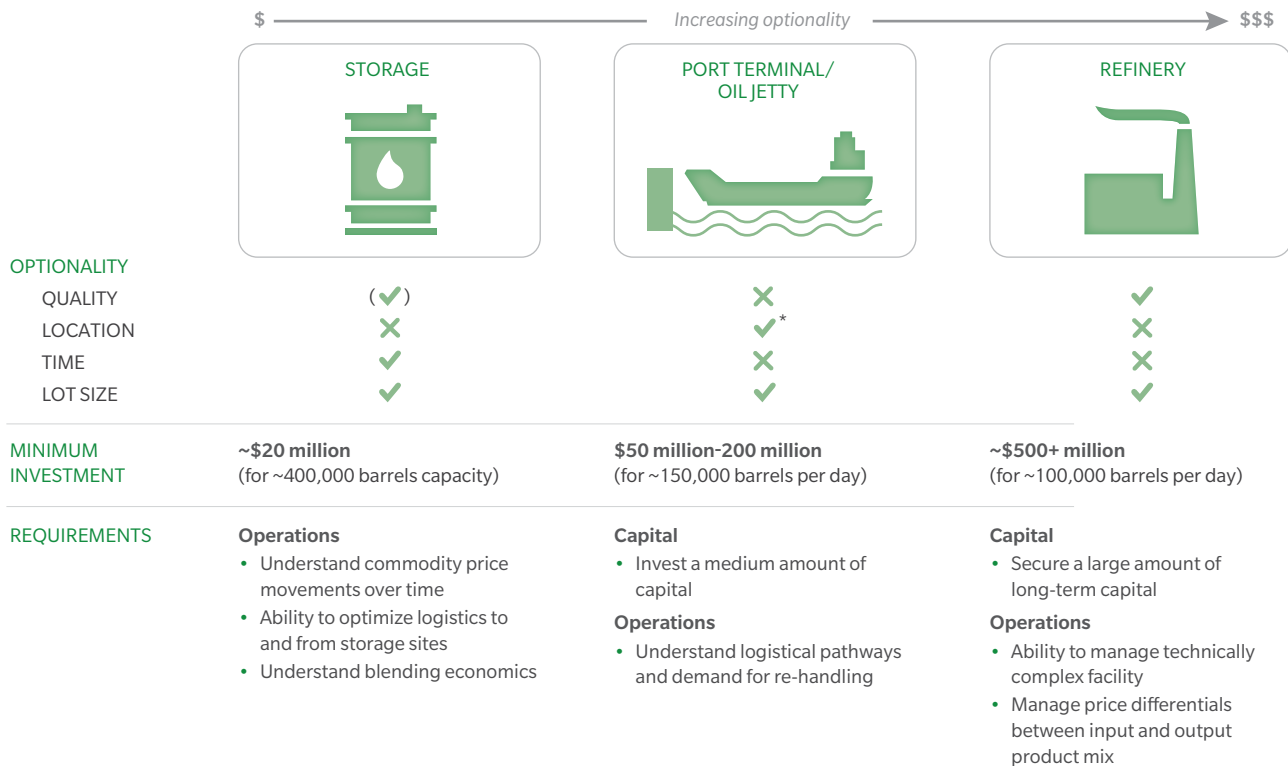
## PREPARING FOR NEW ENTRANTS

Despite the difficulties described above, we believe recent asset sales and the changing funding model will lure new players into the market, who will be seeking to secure supplies or a higher premium for their products.

Recent banking regulatory changes and the industry's shake-up provide new entrants with access to talent and logistical assets.



EXHIBIT 4: TRADERS HAVE BEEN MAKING LARGER INVESTMENTS IN LOGISTICAL ASSETS TO CAPTURE ADDITIONAL “OPTIONALITY”



Source: Oliver Wyman

\* Port terminals provide access to regional markets which can yield different prices

We expect fierce competition among traders vying to pick up new assets that provide the most optionality. Large commodity consumers may see these asset sales as an opportunity to secure supplies and to manage commodity price volatility. That’s why, for example, Atlanta-based Delta Airlines recently purchased an oil refinery.

A good example of a new consumer entrant is German Rohstoffallianz. Recently, the union of large industrials, all large commodity consumers like Essen-based steel conglomerate ThyssenKrupp and petrochemical concern BASF, have been bundling their asset and procurement contract portfolios, and using their political clout to create long-term partnerships with commodity-rich countries such as Mongolia and Kazakhstan.

At the same time, formerly regional oil players are becoming more global. For example, Hong Kong-based BrightOil and Baku-based SOCAR are investing

in production assets and setting up trading operations all over the world to improve the marketing of their products.

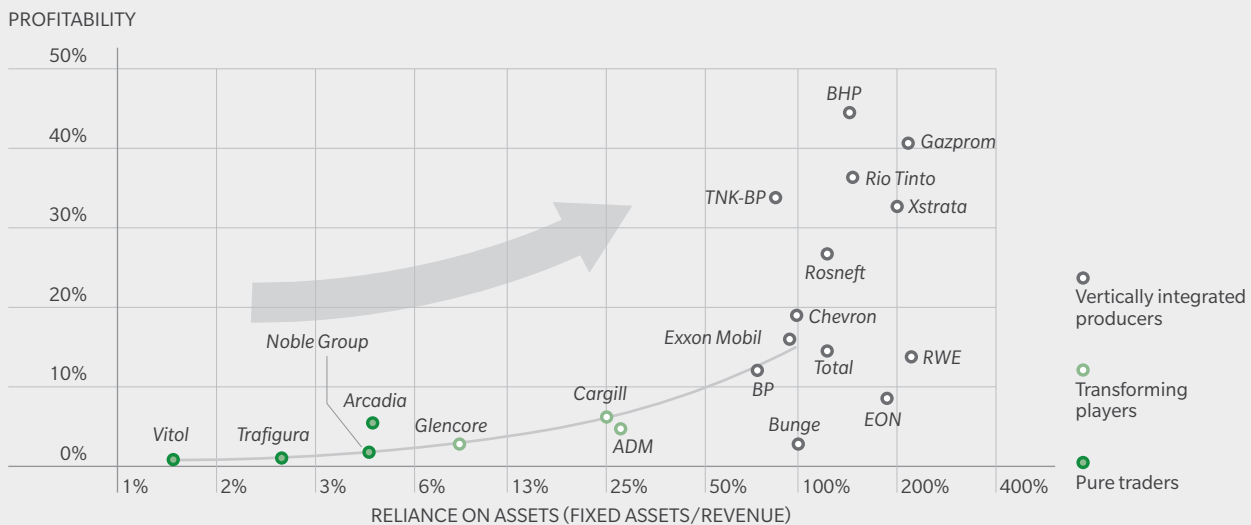
Higher commodity prices and growing costs of funding will make it considerably harder for new entrants to reach the required scale to survive. Having access to working capital support is essential in the start-up stage. This means they must either have full backing from a cash-rich parent or attract private capital.

Although a parent can provide the initial capital support, we often see new entrants face steep competition with existing divisions for cash. In the case of commodity producers, they need to ask themselves whether they should invest in a new trading venture or in a high-margin upstream project. Short-term trade finance tools used by traders also often conflict with a publicly-traded parent company’s leverage constraints.

## THE COMING SHAKE-OUT

Glencore International has started to diverge from the independent trader profile to resemble more closely integrated players. Other traders will likely follow. This graph shows the differences in the business model of an integrated player, such as Exxon Mobil, and an independent trader, such as Trafigura, by comparing the profitability and the reliance on physical assets of a wide range of players across commodity markets.

### PROFITABILITY AND RELIANCE ON ASSETS FOR SELECT COMMODITY TRADERS AVERAGE 2008-2011



Source: Oliver Wyman analysis, Orbis, Datastream, and company financials

The breaking up of formerly integrated players and the growing presence of new players will increase the number of middlemen in the market and lead to further commoditization of commodity trading. Already, a global

gas market is developing as the industry moves away from oil-indexed contracts. At the same time, larger volumes of coal are becoming available on the spot market, providing additional opportunities for existing and new traders.

## THE TIME TO EVOLVE IS NOW

Add it all up, and it's clear that the commodity trading industry is set for a major shake-out. The players who will benefit the most from these developments will be those who can build global logistical networks at the lowest cost and attract the talent to optimize them. Business that have not yet become masters of optionality will need to reconsider whether they can continue to afford not to.

.....  
**Steven Meersman** is an associate in the Global Risk & Trading Practice. **Roland Rechtsteiner** is a partner and head of the Practice. **Graham Sharp** is co-founder of Trafigura and a senior advisor to Oliver Wyman  
 .....



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## EDITORS

JULIA KLEIN  
EMEA Marketing Director  
Financial Services Practice  
Phone: +44 20 7852 7372  
Email: julia.klein@oliverwyman.com

EMILY THORNTON  
Director of Research  
Global Risk & Trading Practice  
Phone: +1 646 364 8279  
Email: emily.thornton@oliverwyman.com

## EDITORIAL BOARD

PARTHA BOSE  
Chief Marketing Officer  
Oliver Wyman Group  
Phone: +1 617 424 3337  
Email: partha.bose@oliverwyman.com

ROLAND RECHTSTEINER  
Partner  
Global Risk & Trading Practice  
Phone: +41 445 533 405  
Email: roland.rechtsteiner@oliverwyman.com

NICK STUDER  
Partner  
Finance & Risk Practice  
Phone: +44 20 7852 7445  
Email: nick.studer@oliverwyman.com

BARRIE WILKINSON  
Partner  
Finance & Risk Practice  
Phone: +44 20 7852 7423  
Email: barrie.wilkinson@oliverwyman.com

## DESIGN

MARK ANGEL  
Design Manager  
dtp+  
Email: dtp.design@oliverwyman.com

SUJIN LEE  
Designer  
dtp+  
Email: dtp.design@oliverwyman.com

MELISSA UREKSOY  
Designer  
dtp+  
Email: dtp.design@oliverwyman.com

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