

# ahead

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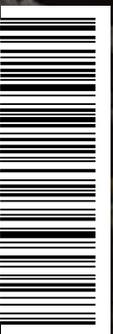
Clariden  Leu

# Building Dreams

Infrastructure

Portrait: Mark Saunders on Storms  
Interview: Telenor CEO Baksaas, FIFA's Siegler  
Clariden Leu People: Sundquist, Muheim, Rutz, Psiola  
Research:  $X|v \sim N(\mu_{BL}, \Sigma_{BL}); \mu_{BL}(v, \Omega) = \mu + \Sigma P' (P \Sigma P' + \Omega)^{-1} (v - P\mu)$

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Donghai Bridge near Shanghai  
Cover: Wembley Stadium, London  
Foster + Partners Architects

# ahead April/May 2007

Photo: Alexander Sauer



Recent volatility in equity and credit markets is a timely reminder why it's wise to focus on long-term investment themes: quality in securities selection, diversification in asset allocation. Even with ups and downs in some markets, the world economy and corporate landscape are largely intact and prospering.

In this issue we focus on infrastructure, an investment theme that will extend beyond any temporary market turbulence. Telenor CEO Jon Fredrik Baksaas also shares his insights on tapping into the vast telecom opportunities in emerging markets. Problems in the U.S. housing market, including subprime defaults, have raised concerns about America's consumer-led growth. Stefan Muheim, senior credit specialist at Clariden Leu, discusses the chances for a U.S. Federal Reserve easing.

Mark Saunders, an award-winning scientist specializing in predicting extreme weather, gives us insights into what may be in store for the 2007 hurricane season. Storm forecasting today is big business, and the emerging cat bond asset class provides returns independent of traditional equities and corporate bonds.

We wish you an enjoyable read!

Yours sincerely,

Beat Wittmann  
Chief Executive Officer  
Clariden Leu Investment Products

## 4 Building Dreams

As much as \$71 trillion is needed to improve global infrastructure through 2030. South Africa's needs are particularly pressing as it prepares for the 2010 World Cup.

## 10 Telenor's CEO Baksaas

Interview with Clariden Leu's Phillip Sundquist.

## 14 Stormy Weather

Mark Saunders reviews the havoc caused by Kyrill, and forecasts the next U.S. hurricane season.

## 18 Gimme Shelter

Clariden Leu's Stefan Muheim on the problems facing the U.S. subprime mortgage market.

## 20 Carry Trades

Thomas Rutz of Clariden Leu explains why people are getting wound up.

## 22 Quants

Felix Csajka, Antonio Oro and Juri Sarbach shed light on why it pays to be good at chess, math and growing bonsais.

## 31 Diary

Upcoming events.

**28** Interview with Markus Siegler,  
spokesman for FIFA



### Impressum

#### Ahead Clariden Leu

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Boys play soccer near Khayelitsha township near Cape Town, South Africa



# Building Dreams

By Alice Ratcliffe, with reporting by Luke Alfred in Johannesburg\*

## Infrastructure: driving transformation

If football has a symbolic home in South Africa, Soccer City is it. The stadium that will be the center of world attention when it hosts the final match of the 2010 World Cup, is today a cement arena, surrounded by little more than the rubble of construction. The rattle of mechanical shovels, dump trucks, and cement mixers is a constant counterpoint to the squeak of caterpillar tractors, and the grinding of heavy gears.

Workers waiting for their shifts doze in the shade, out of the hot February sun, as women set up little alfresco eateries under bright colored tents and gazebos. At lunchtime, the men will spend their wages here on deep-fried chicken, chakalala (fried onion and tomato relish), and pap, the ubiquitous African staple of fluffy, soft-cooked maize meal.

South Africa is already celebrating one key victory, after it beat Egypt, Morocco, Tunisia and Libya to host the next World Cup. It won the bidding despite doubts in some corners that its infrastructure won't stand the strain of hosting an event that

may bring up to 400,000 visitors to the country.

Rejecting any concerns about preparedness and safety, South African President Thabo Mbeki said the World Cup will "do the same to consolidate our self-respect and dignity" as the nation's first full democratic elections in 1994.

Soccer City is at the heart of a 15-billion rand (\$2-billion) program to get 10 stadiums and surroundings, roads and related facilities World Cup-ready. That's just a small part of the 410 billion rand (\$59 billion) earmarked over the next three years to improve South Africa's infrastructure.

FIFA stipulates that five of the 10 stadiums being prepared for the World Cup must be completed by the end of October 2009, when South Africa will already host the Confederations Cup, a major soccer tournament held every four years bringing together teams from different regions throughout the world.

One of the stadiums that will host the 2010 games is located up on the northern



Soccer City, Johannesburg's biggest stadium, will host the World Cup Soccer final in July 2010.

border of South Africa, near Zimbabwe and Mozambique, a 1,730-kilometer drive away from another World Cup venue, Green Point in Cape Town. The distance underscores the challenge of getting ready to host the

\* Luke Alfred is the Johannesburg-based World Cup correspondent for the Sunday Times, South Africa.



matches, 64 in all, in a country nearly four times the size of Germany, the nation that hosted the World Cup in 2006.

"South Africa will be ready, there's no question," says Markus Siegler, spokesman for FIFA, soccer's governing body, speaking in a telephone interview with Clariden Leu. For the full interview please see page 28.

Besides renovating five stadiums, including Soccer City, five others are being built from the ground up.

Improvements include a new high-speed train to serve the Gauteng province, including Johannesburg and Pretoria. The 25-billion rand (\$3.3 billion) Gautrain includes a link between Johannesburg and the city's airport. Its builders hope to complete at least that link by the time the World Cup starts in June 2010.

"The World Cup is the cherry on top of a booming construction market," says John Sheath, spokesman for the country's Cement and Concrete Institute, a private industry body in Johannesburg. Cement consumption in 2007 is expected to grow 8%, due to an enormous need for housing. Building new homes has led to a growing demand for more roads, schools and clinics, Sheath says.

South Africa is in many ways a microcosm of global infrastructure demand, particularly in developing countries, including its need for electric power. More power is needed to supply energy-intensive smelters and a growing number of households that are gaining access to electricity.

In January, electricity across the Western Cape went out after the state-owned provider, Eskom Holdings Ltd., was unable to meet demand.

"We need new capacity by 2008, or we may experience more blackouts," says Kevin Nassiep, chief executive officer of the South African National Energy Research Institute.



**N**eed for Infrastructure: Through 2030, \$71 trillion is needed to improve just basic infrastructure worldwide, according to the Organization for Economic Cooperation and Development.

"About 8% of the new capacity that will need to be built worldwide between now and 2030 is already under construction, and another 21% is planned," OECD economists Barrie Stevens, Pierre-Alain Schieb and Michel Andrieu wrote in a 2006 study.

Electricity is one area where spending is required. Over the past 30 years, the global economy grew by 3.3% a year, while

electricity demand grew by 3.6%.

China will generate as much electricity as the U.S. by 2030, when world electricity demand is expected to be double today's level.

"Raising worldwide electrification rates from 74% in 2002 to 83% in 2030 would provide millions of people with electricity for the first time," according to the OECD.

In developing regions where a large part of the population lacks adequate sanitation services, the benefits of halving the number of people without access to improved water sources by 2015 "would be 9 times the costs incurred," according to the study.



**Investments:** The value of infrastructure deals in 2006 was \$145 billion, a 180% increase from 2000, according to Standard & Poor's.

"Infrastructure assets are relatively boring. But they are very long-lasting, and typically they are structured so they generate a cash flow," says Roland Pfeuti, a fund manager at Clariden Leu, specializing in infrastructure. "Infrastructure investments can serve as an alternative to the traditional real estate or fixed income portion of a portfolio."

Some Australian companies, including Sydney-based Macquarie Bank, have been among the earliest and more active investors in infrastructure. Through its airports unit, Macquarie has investments in airports in Sydney, Brussels, Rome, Copenhagen, Birmingham and Bristol, according to its Web site.

Australian investors' appetite for infrastructure financing may be tied to that country's mandatory retirement savings program, initiated in 1992. That program has led to a large pool of the type of savings that tend to seek longer-term investments

**"Infrastructure assets are long-lasting and generate a cash flow."**

**Roland Pfeuti, Clariden Leu**

to produce steady, reliable cash flows, including infrastructure.

The sector also is drawing new investors, including private equity companies. Private equity companies' participation in infrastructure investing increased substantially last year, with their investments equal to half of all deals, according to Standard & Poor's.

The trend continued into 2007. In February, Kohlberg Kravis Roberts & Co. and Texas Pacific Group said they plan to buy TXU Corp., the largest power company in Texas for \$45 billion, in what would be the world's largest leveraged buy-out to date.

An estimated \$150 billion globally is

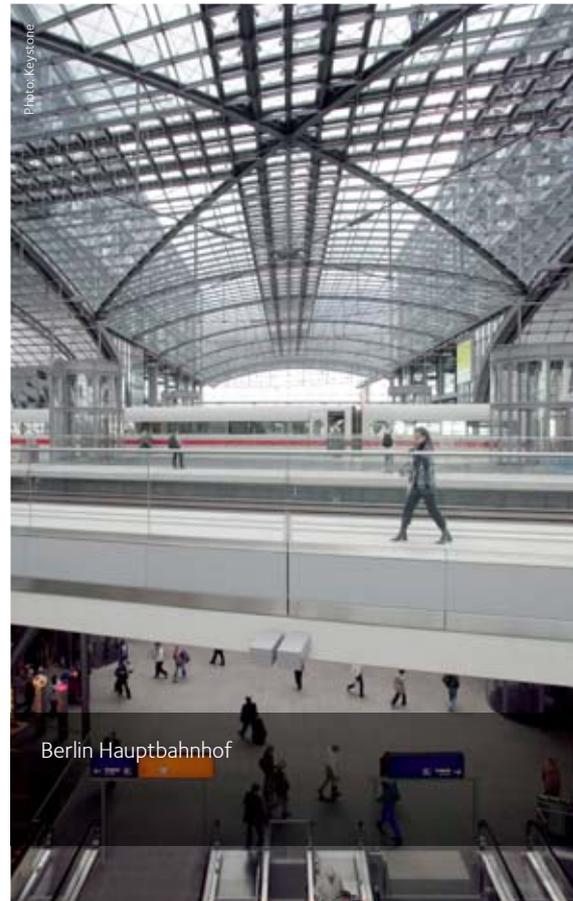
waiting to be invested in infrastructure, according to Michael Wilkens, managing director of infrastructure finance ratings at Standard & Poor's. The amount of money funneled into such projects has raised concerns about a bubble. The area where there is most likely to be a bubble is transportation infrastructure. North American projects may be most at risk now, judging by current prices being paid for assets, according to Wilkens.

Attention may be shifting more to Europe, where one notable failure in the past was the Channel Tunnel, the 31-mile (50-km) rail link connecting England with France. Eurotunnel SA, the company operating the Channel Tunnel sold stocks to the public in 1987 to raise money to help finance construction. The tunnel operator that had expected to generate a cash flow that would allow it to pay off debt and interest, and produce a dividend, instead gained bankruptcy protection in August 2006.

"The problem with transportation across the English Channel is that there is so much available," says Thomas Cullen, a specialist at Transport Intelligence, a Wiltshire, England-based research company specialized in logistics. "Because the shipping technology is so cost-effective, that's pushed down the amounts of volumes going through the Channel Tunnel."

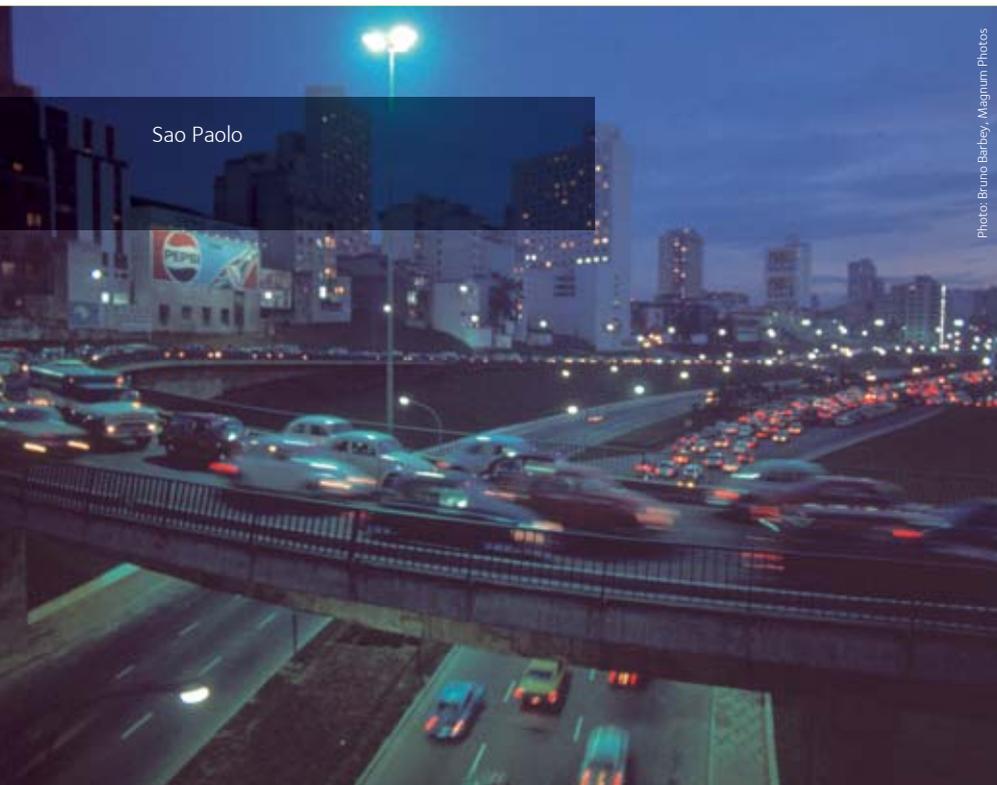
Environmental concerns can also influence a project: the European Union's environmental commissioner, Stavros Dimas, is threatening to sue the Polish government for starting construction on a highway linking Warsaw to Helsinki. Plans call for the Via Baltica to run right through the Rospuda Valley, a peat bog protected by E.U. environment laws. The valley is a haven for wildlife including wolves and eagles.

As commodity prices rise, mining infrastructure also may draw more private investors. The price of copper at the end of 2006 was four times higher than five years ago. Even toll roads may be starting



to attract more investments. "We think infrastructure in the form of toll road construction, and privatization of toll roads, is a fertile area for project finance. We're just starting to see the tip of the iceberg," says Steven Greenwald, head of project finance, Credit Suisse Group, New York.





Sao Paolo

Photo: Bruno Barbey, Magnum Photos

**R**oads: The OECD estimates more than \$200 billion may be needed to build and improve roads worldwide each year through 2030.

The good news in Brazil is that there are 1.7 million kilometers (1.1 million miles) of roads. The bad news is, less than 10% of them are paved.

Brazil's President Luiz Inacio Lula da Silva has vowed to double economic growth to 5% in his second term of office, following his re-election in October 2006. Much of this is to come from infrastructure spending. The federal government also has pledged about 500 billion reais (\$239 billion) to improve energy, housing, and roads.

Companhia de Concessoes Rodoviaras (CCR), the country's largest toll-road operator, hopes these initiatives will include resumption of auctions for toll road concessions.

"Now that the government is starting a new term, we expect some state governments to hold auctions for toll road concessions," said Arthur Piotto, CCR's head of investor relations. Concessions to be auctioned could include up to eight highways in Sao Paolo, as well as Sao Paolo's ring road, and another urban concession. San Paolo's metropolitan transport authority is also planning to construct a train to connect the city with the airport, and a second mass-transit rail line.

CCR also is part of a private consortium that plans to bid for toll road concessions in Mexico now managed by that country's government toll road operator. The operator, FARAC, was set up to rescue failed toll road projects. FARAC is now preparing to auction about 10 of its concessions to private operators. CCR's consortium includes a U.S. investment fund.

"It's common to see pension funds, or infrastructure funds step in. We think these projects in Mexico will attract a lot of attention," says CCR's Piotto.

**Infrastructure in comparison: Roads, Rail, Electricity and Energy**

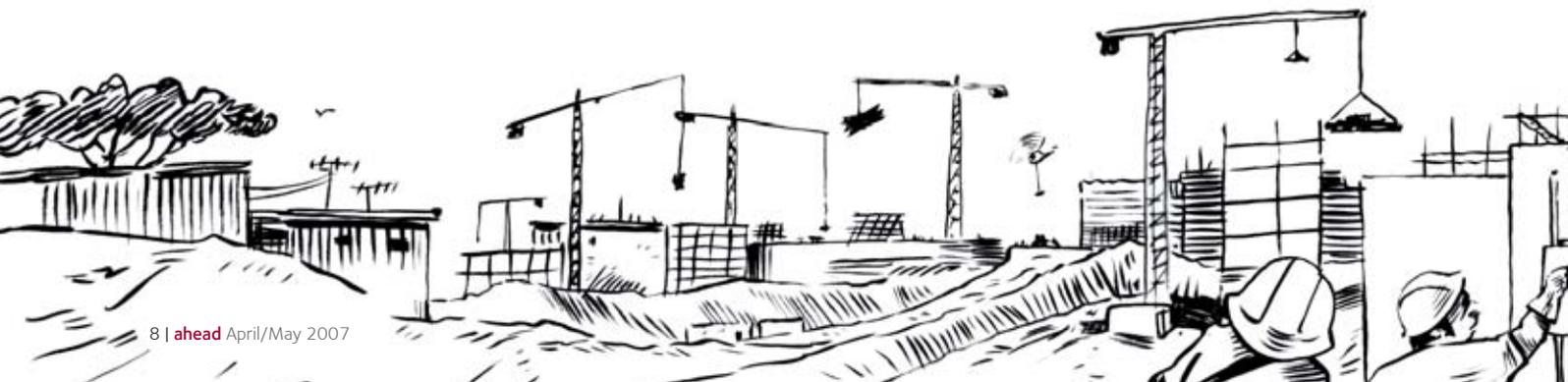
Source: World Bank

Selected Countries	Roads Total, km	Roads Paved	Rail lines km	Rail Goods Hauled <sup>1</sup>	Electricity Production <sup>2</sup>	Energy Use per capita <sup>3</sup>	Population Millions	Area Square km
Brazil	1,724,929	6%	30,403	**	365	1,065	183.9	8,459
Canada	1,408,900	**	49,422	323,600	587	8,240	32	9,094
China	1,809,829	80%	61,015	1,828,548	1,907	1,094	1,296.2	9,598
Germany	231,581	100%	34,729	77,640	594	4,205	82.5	349
India	3,851,440	63%	63,221	541,208	633	520	1,079.7	2,973
Japan	1,177,278	78%	20,060	22,200	1,038	4,053	127.8	365
Poland	423,997	70%	19,576	47,847	150	2,452	38.2	306
Russia	537,289	67%	85,542	1,664,300	914	4,424	143.8	16,381
Switzerland	71,220	**	3,378	9,313	65	3,689	7.4	40
Turkey	354,421	42%	8,697	9,332	141	1,117	71.7	770
Ukraine	169,739	97%	22,011	233,961	180	2,772	47.5	579
UK	392,342	100%	16,514	20,700	396	3,893	59.9	242
US	6,387,154	59%	141,961	2,200,123	4,054	7,843	293.7	9,159

1) Rail goods hauled in million tons/km

2) Billion kilowatt hours

3) kgs oil equivalent



**E**nergy: The OECD estimates global annual electricity investment needs of about \$350 billion per year.

The U.S. is expected to install hundreds of new generators to meet growing demand, and replace old facilities.

Modern coal- and gas-fired plants are expected to provide more than three-quarters of the new electricity required in the next two decades. Demand is fueling a boom in financing for new power plants and generators. Independent power producers are contributing an increased share of power generated in the U.S., now about a third compared with only about 10% a decade ago. The industry is drawing an increasing number of private investors. Meanwhile, the cost of building power plants is rising as demand for materials and labor increases.

For example, a U.S. coal plant that last year may have been built “for around \$2,000 or \$2,200 per kilowatt” may be more expensive this year. “Today we’re doing a similar coal-fired plant that would be closer to \$2,700 in cost,” says Steven Greenwald, head of Credit Suisse Group’s project finance team in New York. That would represent an increase of nearly one-third.

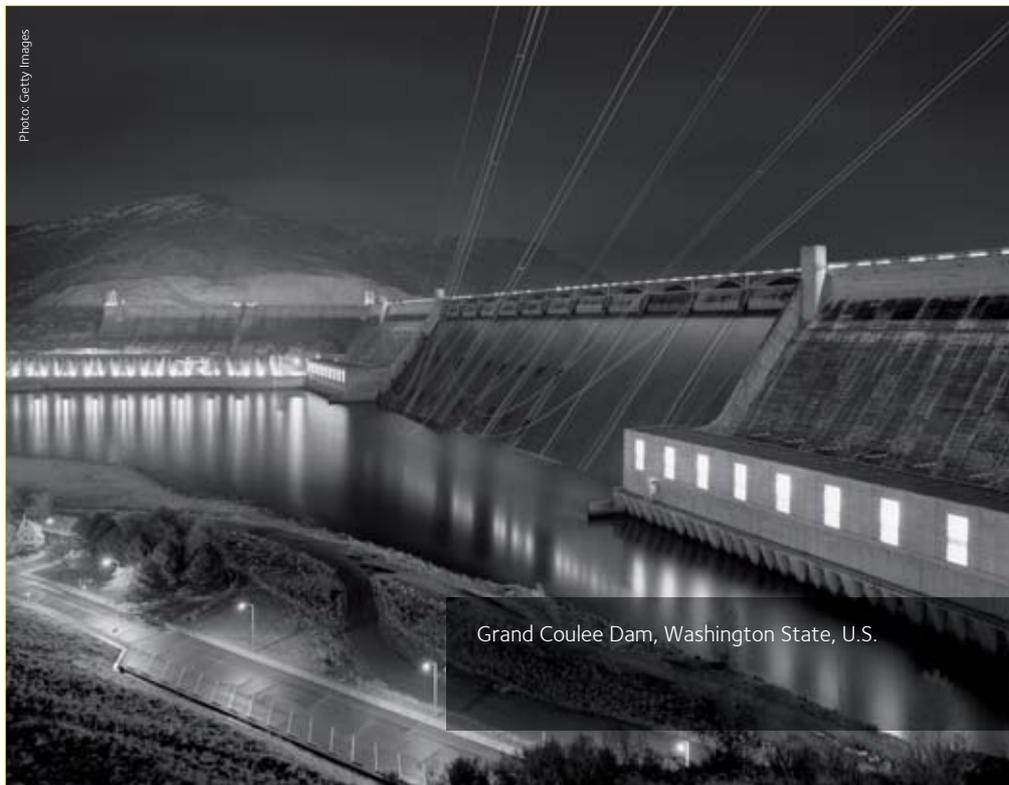
Problems may crop up, given the huge scale of financing. Twenty-five years ago, public utility Washington Public Power

**„There’s a lot more scrutiny that people put into project financing.”**

**Steven Greenwald, Head of Project Finance Credit Suisse Group, New York.**

Supply System Co. (WPPSS) defaulted on over \$2 billion in bonds it sold to finance new nuclear power plants. Nineteen years later, in December 2001, energy trader Enron Corp. filed for protection from creditors in a U.S. bankruptcy court. In general, however, the projects get more due diligence than ordinary credit agreements.

Photo: Getty Images



Grand Coulee Dam, Washington State, U.S.

“There’s a lot more scrutiny that people put into project financing, because you have typically nothing on the day you make that investment, except some contracts and a promise from the company they are going to build something,” Credit Suisse’s Greenwald says. The debt issued by such borrowers is “almost always fully secured. So, lenders do have collateral in the hard assets and contracts that will generate cash,” he says.

**U.S. electric, gas and water utilities debt issuance by region, year (millions of dollars)**

Source: Thomson Financial

Issuer/Borrower (Parent State, Region)	2006	2005	Change
Northeast	11,742.7	5,722.2	105%
Southeast	6,950.0	6,650.7	5%
Southwest	6,802.6	5,873.2	16%
Mideast	6,027.5	6,420.2	-6%
West	4,635.0	3,239.7	43%
Midwest	3,821.6	3,035.7	26%
Foreign	3,737.1	2,852.7	31%
Industry Total	43,816.2	33,938.1	29%

Continued page 26



# Interview: Jon Fredrik Baksaas

Phillip Sundquist  
talks with the CEO of Telenor

**“We have the capacity, and the competence to extend into new geographies.” Baksaas, speaking from Telenor’s headquarters in Fornebu, Norway.**

## Where do you expect to get revenue growth in 2007? What can you say about the contribution from emerging markets?

“We are in those countries that really allow us to expand our penetration.\* That includes Bangladesh and Pakistan. In both countries, penetration is expected to rise quite significantly through 2007. In the Ukraine, even though there’s a coverage measured by SIM cards of above 100%, only 60% to 65% percent of the population has a mobile phone, as many phone subscribers have dual SIM cards.\*\*

Thus, there will be real penetration growth in the Ukraine, too. And, in the Nordic countries, there’s still potential for migrating fixed-line minutes to the mobile phone. In Thailand, we also expect interconnection between the operators to be implemented, which will gross up revenues, and have an effect on group figures.”

\* Editor’s note: Penetration refers to subscribers as a percentage of total population.

\*\*SIM stands for Subscriber Identity Module, the removable card in a phone that identifies the mobile phone service subscriber. Subscribers in some countries may have more than one phone card, because it allows them to take advantage of best rates at different times offered by different mobile operators.



## Do you expect emerging markets to remain a key growth driver for the company?

“Yes. Of course, you could argue that in a couple of years, these countries may have a different definition than ‘emerging’. These economies are the primary growth driver for Telenor. No doubt about that. And, it is also extraordinary that from our fairly limited home market in Norway, with only about 4.5 million people, Telenor’s activities have developed to cover a geography of 650 million people. Our various companies are able to attract, on average, a 31% market share in this geography. We’re very satisfied with the way this has developed, despite the risk elements this strategy posed in earlier times.”

## What kind of approach do you take in emerging markets?

“For example, we started in Bangladesh in 1997. We all knew that this was at least a 10-year type of project before it proved itself. And 10 years down the line, we are in the midst of a very successful business development.”

## You mentioned risks in these markets. Can you elaborate?

“The risk element, from an operational perspective is, of course, to some extent, related to the economic development of these economies. But the beauty of it is that basic needs of communication are not drastically reduced if growth declines. The communication industry, the way we see it, is one of the most important enablers for economic development in general. That goes both for micro-level in an economy, as well as on a macro level. So the industry is fairly robust. And, if you get a setback in economic development, you can, with a fairly short lead-time, reduce your ongoing capital expenditure as needed.”

## Do you anticipate expanding into additional countries besides those where you currently operate?

“The two transactions we did in the past year were Sweden, and Serbia. We are active, and we are following what is going on in the markets. We tried to do a transaction in Egypt, but the price tag for an entry proved too costly, based on our calculations.”

**Jon Fredrik Baksaas** has been CEO of Telenor since 2002. He joined Telenor in 1989. Prior to becoming CEO, he served as finance director, executive vice president, and as CEO of TBK A/S, a Telenor subsidiary. He also has served as Telenor's chief financial officer, and is on the board of Svenska Handelsbanken AB. He has a Master of Science degree from the Norwegian School of Economics and Business Administration in Bergen, and also studied at IMD in Lausanne, Switzerland. Baksaas, a Norwegian, says his hobbies include cross country skiing, ice hockey and carpentry.



Telenor's Nittedal teleport  
Norway



Photo: Getty Images

“These examples show that we believe we have the capacity, and the competence to extend into new geographies if we can find a window of opportunity of relevance to us, and one that works on our balance sheet. That doesn’t mean that we are stretching our calculations to beyond what we feel is safe.”

### **When you evaluate entering a potential market, which criteria do you consider?**

“The competitive landscape, of course. And, in addition, the license definition. How are the license requirements guarded by the regulators in the country: at least so that the basic principle is that of a level playing field between different players, and that one can reasonably anticipate that such a framework will be sustainable over time.”

### **What differences do you see in various emerging markets?**

“When Telenor decided to enter Bangladesh in 1996, and launched services there in 1997, a partnership was needed with Grameen Bank, as well as international vendors, Japanese companies, and the World Bank. This partnership made it possible to start up initial investments for a modern communication infrastructure in a very, very risky environment.”

“Then, to give another example, in 2004, Pakistan offered two new licenses to the international community, because the government really wanted to boost the mobile industry in their country. Since the licenses were awarded, the market has gone from five million users to approximately 50 million users. In just two years! The regulatory framework was deliberately set up to attract foreign investors.”

“If the regulatory framework is spelled out, you can really achieve something with a modern communication infrastructure and a competitive level playing field. Pakistan is a good example.”

### **What infrastructure needs do you see in various countries?**

“In Scandinavia and in Western Europe, two infrastructures are developing in parallel: fixed-line – with broadband access and capabilities – and mobile telephony, which is taking over more voice and light Internet usage. We’ll see further development of broadband access based on a fixed line, with enhanced wireless solutions.”

“In terms of developing countries, which don’t have the fixed-line infrastructure in the the same way as Europe, the ambition of delivering Internet access to these populations is both a social responsibility, and a business opportunity.”

**T**elenor ASA, based in Fornebu, Norway, near Oslo, gets almost half its revenue from emerging markets. Its business began in 1855 with the first telegraph connections in Norway. It was previously known as Norwegian Telecommunications, and until 1969 as The Norwegian Telegraph Administration.

Its position as monopoly provider began to be broken up in 1988, when other companies were allowed to sell telephones in the country. The company was partially privatized, and its shares were listed on the Oslo stock exchange in 2000. With the listing, the Norwegian government's stake was reduced to 77%, and then lowered again to a current level of 54%.

Recent acquisitions include its purchase of Vodafone Sweden in January 2006. It also acquired Mobi 63, a Serbian mobile operator, in July 2006. Telenor owns a majority stake in Ukrainian mobile telecom operator Kyivstar, with the rest owned by Altimo, part of Russia's Alfa Group. Alfa is also partner together with Telenor in VimpelCom, the Russian mobile operator.

In Bangladesh, Telenor holds 62% of GrameenPhone. Grameen Telecom Corp. owns the other 38%. The company has set up 500 community information centers in the country, which provide Internet access through GrameenPhone's EDGE network.

In December, Telenor's CEO held a

meeting with Bangladesh banker Muhammad Yunus, the founder of Grameen Bank. Yunus won the Nobel Prize in 2006 for his work in microcredit – small loans made to entrepreneurs in developing countries. Telenor has said it plans to keep a majority stake in GrameenPhone. ■

#### Why is Internet access important in developing countries?

"Studies show that the Internet has an even bigger impact on economic development than voice services. In Bangladesh, we have built 500 community information centers where village people can get access to Internet through using the EDGE data communication protocol of the GSM standard as a data carrier. I've tested this myself, being in Bangladesh in one village, accessing my private e-mail account back in Norway."

"It does work a bit slower than what you're used to on your digital subscriber line, but it works, and it gives access, and that is a tremendous opportunity for distribution of education, distribution of data bases, as well as public services to the people living in these areas."

#### You've succeeded in working with your largest shareholder, the Norwegian government. Why have you been more successful in this partnership than some other European companies that are controlled by their government?

"We have never enjoyed a protected position in Norway in the domestic market. And the government and authorities have had an aggressive approach to the importance of competition. On top of that, the government has never interfered in necessary changes and adjustments in terms of how we work. And, the government actively supported the decision to go to international markets in the mid-1990s. All these factors gave us the opportunity to compete."

#### What is the top priority at Telenor?

"The top one, in all our operations is to stay one step ahead of competitors. We are going to be a little bit better on innovation. We are going to be efficient in showing how to develop operational excellence, including across markets. We are going to be good at offering our expertise without weakening the strength of local operations. If we can handle that, we will be able to stay ahead of the competitors and improve profitability."

Photo: Alexander Sauer



**Phillip Sundquist** is head of the infrastructure equity team at Clariden Leu. He joined Clariden, now Clariden Leu, in 2000. He was born in Fairbanks, Alaska and is a citizen of both the U.S. and Switzerland. He received his MBA at the University of Washington in Seattle and is a Chartered Financial Analyst. His hobbies include basketball, scuba diving and listening to jazz. He and his wife have lived in Zurich since 1992.

# Stormy Weather

By Alice Ratcliffe

**O**n the morning of January 18, 2007, Mark Saunders sat in his office 20 miles (32 kilometers) southwest of London, tracking the progress of a series of irregular, colored ovals moving across a computer screen. Those shapes denoted a storm, and in areas at the center of the circles, the screen glowed orange, red and purple. The colors indicated wind gusting at speeds of up to at least 62 miles per hour (100 kilometers per hour). That was enough to cause damage to property. The storm was now nearing Britain.

Saunders, one of a small number of scientists specialized in long-range storm

**“We expect another active hurricane season in 2007.” Mark Saunders**

forecasting, remained for a time in his office on the ground floor of the Department of Space and Climate Physics at University College London. By two in the afternoon, through his south-facing window, he could see tops of large trees starting to sway violently in the wind. After a while, he got up from his desk and put on his coat.

Then, Saunders says, “I went for a walk.” He pauses, before adding: “It was just a short walk. About 10 minutes. I kept a close eye on the trees.”

Besides his scientific research, Saunders heads two storm forecasting teams: one

**Mark Saunders tracks big storms. Be afraid. Be very afraid.**

monitors tropical storms worldwide, including hurricanes, and another tracks North Atlantic, and European storms. He’d been monitoring the forecasts for such a storm – it would be christened Kyrill by German meteorologists – even before it had properly begun to form two days earlier, just south of Newfoundland.

Kyrill had crossed the Atlantic in two days at speeds that surprised even some meteorologists. The storm’s strength was intensified by an unusually strong jet stream.

The high speed, according to Saunders, was due to unusual north-south temperature differences over the North Atlantic.

“When cold polar air pushes down south and collides at mid-latitudes with unusually warm air, a sharp north-south temperature gradient occurs. This is the main reason why the jet stream was stronger than normal,” says Saunders.

The jet stream was clocked at speeds of 190 mph (300 kph) as Kyrill approached Western Ireland. When Kyrill struck Dublin on the morning of January 18, it closed the city’s shipping port for the first time in over 30 years, and left passengers who had arrived in Aer Lingus flights unable to disembark because the wind made it too dangerous. The storm claimed its first victim;

a construction worker in Finglas killed by a plank of wood blown off a scaffolding.

By the time it had run its course, dissipating over North Russia on January 20, Kyrill would leave behind 47 dead, and up to \$5 billion in insurance claims.

In Saunders’ office hangs a framed photo. The photo was taken one evening in July 2006 at the Royal Albert Hall in London. It shows Saunders receiving the British insurance industry’s prestigious Risk Management Award for a system called Storm Tracker, a global forecasting tool for tropical storms worldwide. The project’s backers include the reinsurance broker Benfield Group Plc., insurer Royal and Sun Alliance Insurance Group Plc., and Atlanta, Georgia-based Crawford & Co. insurance agents. It was the second award for the team, which also includes the U.K. Met Office’s storm forecasting unit.

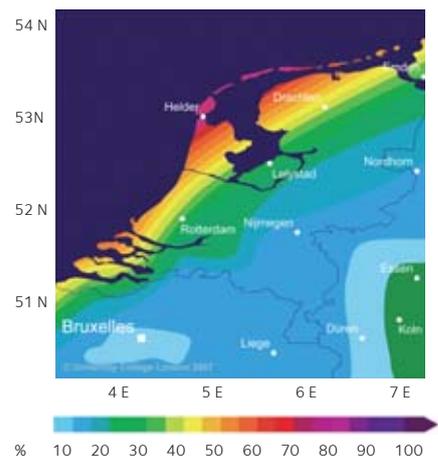
**Forecasts by EuroTempest made at 1 a.m. January 17 - high probability of damaging winds at 4 p.m. January 18.**

Source: EuroTempest



Millennium Bridge, London: January 18, 2007

Photo: AP, Keystone



"About two-and-a-half years ago we put Storm Tracker on the Web. We're getting to the stage where the next step would be to turn it into a commercial venture," says David Simmons, an executive who works closely with Saunders as part of Benfield's ReMetrics analytical team. Apart from a subscription e-mail service, Storm Tracker is now free.

On the day Kyrill struck, Saunders's e-mail blinked incessantly. How strong was the storm going to be? Among those querying were an insurer in Bermuda, and a U.S. hedge fund.

Today storm forecasting is big business. Hedge funds may buy risk from insurers and reinsurers. Insurers and reinsurers may also sell the risks they cover via so-called catastrophe bonds. Investors who buy such bonds are betting against the likelihood of a triggering event, such as a very strong earthquake, or a windstorm. A catastrophic event could mean one or more cat bonds would become worthless.

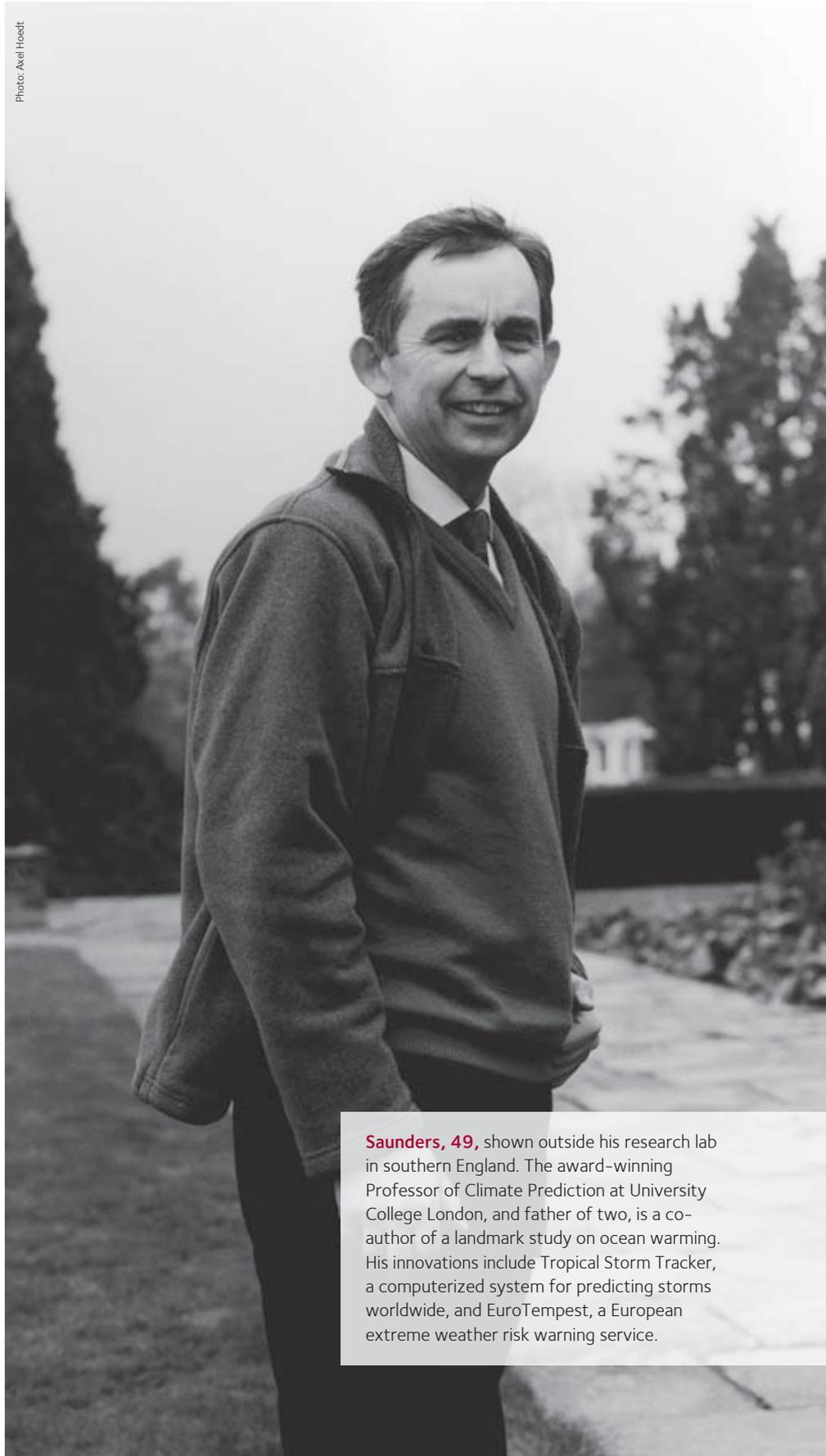
One bond threatened by Kyrill was a \$150-million private placement sold by Hannover Re. That had as its trigger a European wind storm. It would have to be a storm registering as a "50-year" event in seven countries. Kyrill was threatening to become such an event. It shot over England's south coast gusting at speeds of 98 mph (158 kph) at the Needles Lighthouse. Further to the southwest, helicopters were dispatched to rescue 26 crew members who had to abandon their container ship, the MS Napoli, in the English Channel.

Kyrill lost no strength as it moved into the European continent. Schiphol Airport became a provisional hotel as winds halted train services, and air travellers were stranded. Rail passengers in Amsterdam were evacuated from the main train station after wind blew off sections of the station's glass roof.

"Because extra-tropical cyclones get their energy to a large extent from the jet stream, and north-south temperature contrasts in the atmosphere, they are different from tropical cyclones, which are fuelled by evaporation of heat from warm ocean waters," says Saunders. "Extra-tropical cyclones do not lose their strength as they hit land, just as we saw with Kyrill."

In addition, cyclones in the northern hemisphere rotate counter-clockwise. Kyrill was moving eastwards. For that reason, the highest winds would tend to be on the storm's southern edge where the two forces – translational, or forward motion, and counter-clockwise rotation – combined, according to Saunders.

Photo: Axel Hoedt



**Saunders, 49**, shown outside his research lab in southern England. The award-winning Professor of Climate Prediction at University College London, and father of two, is a co-author of a landmark study on ocean warming. His innovations include Tropical Storm Tracker, a computerized system for predicting storms worldwide, and EuroTempest, a European extreme weather risk warning service.

By the time Kyrill reached Germany, the swathe of damage was over 500 miles (800 kilometers) wide, making it the most ferocious storm to hit the country since Lothar in December 1999. Lothar killed 110 people and caused \$6.8 billion damage to insured property.

**“One should expect a Kyrill-strength storm about every five years somewhere in Europe.”**

Kyrill forced an unprecedented shut-down of Germany’s rail service. Berlin’s new central rail station was evacuated after wind dislodged a two-ton steel girder that fell onto a stairway. In southern Germany, winds as high as 124 mph (200 kph) buffeted Wendelstein peak. At lower elevations, part of the roof of Munich’s Hofbrauhaus beer hall was torn off.

By early Friday, Kyrill had blown through Austria, leaving thousands of homes without power. In the Czech Republic up to one million homes were temporarily without electricity. Two people were killed near Prague when their car was hit by a falling tree.

As fierce as it was, the storm did not trigger Hannover Re’s bond.

“My feeling is, one should expect a Kyrill-strength storm about every five years somewhere in Europe,” says Saunders.

Saunders is one of a small number of experts known as storm modellers. He began not as a meteorologist, but as an expert on space physics. He became interested in extreme weather in 1995. While studying sea surface temperatures he noticed a link between temperatures and an active Atlantic hurricane season. That year saw 19 tropical storms, with 11 of those classed as hurricanes.

“I was looking at sea surface temperatures worldwide, monitoring them using satellite data, and I said, ‘let’s have a look and see if there’s a link between sea temperatures and high hurricane activity. I found that there was,” he says. His findings, made together with Andrew Harris, also at University College London, were published in 1997 and changed the way people think about tropical storms.

He is respected by peers in the rarified atmosphere of storm forecasting as having done “innovative research into global hurricane activity,” according to Chris Landsea, science and operations officer at the U.S. National Hurricane Center. “His work on seasonal forecasting is based on sound physical and statistical analyses and is taken quite seriously by people in the hurricane community.”

Saunders was correct when he forecast in December of 2004 that the next year would be an active one for hurricanes: “activity in the top third, historically, to 72% probability.”

The year 2005 was a record year for U.S. hurricanes. Katrina struck New Orleans on August 29, 2005. That storm was the only catastrophe so far big enough to exceed

the threshold on a cat bond. The bond, issued by a vehicle of Swiss Re, was tied to claims covered by insurer Zurich Financial Services. Katrina killed 1,300 people and caused insured loss estimated at \$45 billion, the highest of any natural disaster. It was followed by hurricanes Rita and Wilma, which added another \$20 billion.

James L. Franklin, a senior hurricane specialist at the National Hurricane Center (NHC), speaking by phone from the Center’s double-shell reinforced concrete facilities in Miami, says long-range storm forecasting is still an inexact science.

“A weather model is nothing more than a collection of certain physical laws that govern the atmosphere, turned into computer code,” he says. Forecasting accuracy has increased with improvements in computer models. Scientists also have become more adept at using data collected by satellites measuring radiation in the atmosphere, which makes it easier to assess conditions over oceans, he says. All the same, “just knowing a year is going to be active doesn’t tell you very much about what the actual impact is going to be.”

The U.S. National Oceanic & Atmospheric Administration will issue its outlook for the U.S. hurricane season in May. A separate group of forecasters, scientists William Gray and Philip Klotzbach at Colorado State University, said in December they expect an above-average Atlantic storm season in 2007. Saunders’ forecasts, part of those issued by the tropical storm risk forecasting service, also call for a likelihood of a high number of hurricanes.

“We expect another active hurricane season in 2007,” Saunders says, adding “there’s an 85% probability activity will be in the top one-third of years historically.” He based the prediction on two models: one is derived from forecasts of sea surface temperatures and wind patterns, and the other is tied to the El Nino, associated with warm sea surface temperatures. Since 1950 there have been 10 El Nino events. Eight out of ten of these were followed by above-normal hurricane activity in the next season. ■



Bad Tennstedt, Germany: January 19, 2007

# U.S. Subprime Market Seeks Shelter

By Stefan Muheim and Alice Ratcliffe

“One-half of domestic banks, on net, reported that they expect a worsening of the quality of their nontraditional residential mortgage loans this year; a few institutions noted that they anticipate that the quality of such loans will deteriorate substantially in 2007.”<sup>1</sup>

Such comments in the U.S. Federal Reserve’s latest survey on lending raise worries in financial markets that problems in U.S. mortgage lending may get worse before they get better. The implications for the rest of the economy may also be more pervasive than thought. What worries regulators most are problems starting to show up among so-called subprime borrowers, meaning those with riskier credit ratings and less secure incomes.

In the first half of 2006, about 20% of mortgage loans outstanding were to subprime

borrowers, according to the U.S. Mortgage Bankers Association.<sup>2</sup>

Almost three-quarters of these subprime mortgage loans are relatively new, having originated since 2003. In the first half of 2006, 67% of subprime originations were adjustable-rate mortgages. Of those, 17% were so-called interest only (IO) loans, which allow borrowers to make interest-only payments for a set period before the loan starts to amortize.

Americans have bid up home prices, helped by an array of fancy mortgage products that have appealed especially to people who otherwise couldn’t afford to buy a home. But after 17 rate hikes by the Fed, rising interest rates have put a heavy burden on subprime borrowers who signed agreements when interest rates were low and now are struggling to keep up.

Aggressive lending is getting some of the blame for problems that have hit markets in recent weeks.

“While similar products have been available for many years, the number of institutions and providers offering them has expanded rapidly,” according to one U.S. study, which notes that nontraditional mortgage loans are “now offered by more lenders to a wider spectrum of borrowers who may not otherwise qualify for more traditional mortgage loans.”<sup>3</sup>

All this worries U.S. regulators, who have issued guidelines aiming to crack down on aggressive lending tactics, citing in particular “loans that involve repayment terms that exceed the borrower’s ability to service the debt without refinancing or selling the property.”<sup>4</sup>

Those affected include Americans who, unable to qualify for other credit, have borrowed against their homes to pay off credit card bills. Such lower-ranked borrowers have been helped to get loans by array of new structures that make mortgages cheaper – at least initially. These include so-called “payment option,” or “Option ARM” loans, in which a borrower may choose

between amortizing the mortgage, paying just the interest, or making a minimum monthly payment. In the case of a minimum payment, the loan balance negatively amortizes, meaning the outstanding loan increases. Typically, the extent to which a loan can increase is capped at no more than 110% of the loan’s original balance. Once that is exceeded, the loans may default.

Symptoms of problems in the sector include failures among lenders specializing in subprime lending. In December two U.S. mortgage companies – California-based Ownit Mortgage Solutions Inc., and Sebring Capital Partners, located in Texas – were forced to shut down. New Century Financial Corp., the second-largest U.S. mortgage lender to subprime borrowers, which buys and sells mortgage loans, said March 12 that its creditors had stopped giving it financing. If all its lenders forced it to buy back the mortgages it had sold, it would face repayment obligations of \$8.4 billion.

HSBC Holdings Plc announced in February it was increasing provisions for bad loans tied to mortgages made by its U.S. unit. It followed with news two weeks later in another announcement that its head of North American operations would step down. In March, HSBC announced it had increased provisions for bad debt to \$10.57 billion, \$2.77 billion higher than in 2006. It said the “major credit issue” was in the U.S. subprime mortgage market.<sup>5</sup>

An estimated \$1.1 trillion to \$1.5 trillion of adjustable rate mortgages (ARMs) could potentially “reset” in 2007. Of these, \$600 billion to \$700 billion will require refinancing, while of the remaining \$500 billion to \$800 billion, about half will be resetting for the first time, according to Mike Frantantoni, senior economist for the Mortgage Bankers Association.

Among other problems, as lending hits a rough spot, home prices are starting to drop for the first time in several years.<sup>6</sup> While this may be good news for anyone worried about a bubble, it could have a knock-on effect on



Photo: Alexander Sauer

**Stefan Muheim**  
Senior Credit Specialist  
Clariden Leu Investment Products

U.S. consumer demand.

Helped by increases in prices that has in some cases doubled the value of the average home over 10 years, the level of home ownership in the U.S. has reached a record level of about 70% of all Americans owning homes.

Because mortgages may be bundled and sold to other companies, which in turn sell them to investors, problems that reduce the value of repacked mortgages could also make it harder in future to finance mortgages.

Not only lenders, but also homebuilders have been hurt by the fallout in the mortgage market. Toll Brothers, Inc., a Pennsylvania-based company specializing in luxury homes, reported that first-quarter net signed contracts fell, and it was too early to predict an upturn in demand for new homes.

Fed policy is currently on hold. These problems may be a factor arguing in favor of a shift to easier monetary policy, in order to provide insurance against problems spreading to other areas of the economy. The Fed has left the target for federal funds, a rate banks charge each other for overnight lending, at 5.25% since June 29, 2006. ■

**U.S. mortgage rates versus U.S. housing prices**

Source: Fannie Mae (U.S. Federal National Mortgage Association), U.S. Commerce Department



■ U.S. 6-month adjustable-rate mortgage rate, left scale  
 ■ U.S. new home median prices, (\$1,000) right scale

<sup>1</sup> Senior Loan Officer Opinion Survey, Feb. 5, 2007; U.S. Federal Reserve Board. Almost one out of two banks the Fed surveyed for its latest lending report expected loan quality of residential mortgages to deteriorate in 2007. Where nontraditional residential mortgages are concerned, one in 12 banks believed loan quality would "deteriorate substantially."  
<sup>2</sup> The Residential Mortgage Market and Its Economic Context in 2007, Mortgage Bankers Association.  
<sup>3</sup> Guidance on non-traditional mortgage product risks, Nov. 13, 2006. American Association of Residential Mortgage Regulators, Conference of State Bank Supervisors, Texas Department of Savings and Mortgage Lending.  
<sup>4</sup> Proposed Statement on Subprime Mortgage Lending, Mar. 2, 2007; U.S. Federal Reserve Board.  
<sup>5</sup> HSBC 2006 Final Results, March 5, 2007.  
<sup>6</sup> Standard & Poor's/Case-Shiller Metro Area Home Price Indices.

**Q&A with Stefan Muheim**

**How worried should we be about the downturn in the U.S. housing market?**

"Right now, it looks like an isolated real estate problem affecting predominantly the adjustable-rate mortgage segment for both subprime and - more surprisingly - also prime borrowers. Of course, things could change. For one, banks are starting to introduce tighter credit standards, which may as a consequence curtail lending and act as a brake on the economy. The biggest risk is that banks will grow too cautious towards lending in general, i.e. consumer credit or corporate credit, leading to a so-called credit crunch."

**What's the risk of a recession, in that case?**

"It's still not clear if we are just seeing a few soft spots, suggesting we'll have below-trend growth for the next six months. Or, if on the other hand, the problems are going to be so severe that we tip into recession in the U.S. We've seen a downturn in housing, and in the automotive industry, and the weakness is currently spilling over into other areas of the industrial part of the economy. On the positive side, services are still holding up reasonably well. It will be important to see how the U.S. jobs market develops. Strength in the labor market is crucial for a successful soft-landing. And so far, the labor market has held up pretty well."

**How about corporate default rates?**

"Default rates were at 25-year lows in January. There is a high correlation between bank lending standards, and default rates. If we see tighter credit standards on top of higher credit risk premiums, it would eventually lead to higher default rates down the road."

**How may an investor want to be positioned in such a market?**

"Risk premiums of low-quality bonds are at historically low levels. At the end of January, high-yield debt in Europe, for example, yielded just 208 basis points more than risk-free government debt. The difference has been much wider in the past. It averaged 1,150 basis points in 2002, for example. That suggests there's a substantial risk to owning low-quality bonds, in the medium-term."

**Which areas might offer better value?**

"The best value, in my view, is certainly in long-dated Treasury bonds. Among other reasons, that's partly because of increasing probability that the U.S. Fed may lower rates. If we see prolonged weakness in the U.S. economy, and companies start to cut jobs, this would lead to a decline in average income, and consumption. In such a scenario, the Fed may well decide to cut rates to take out some insurance against a recession. We already saw it did that in 1998, when the Fed lowered its target lending rate by 75 basis points."

# Carry Trades – Coming Unwound?

By Thomas Rutz and Alice Ratcliffe

Photo: Alexander Sauer



**Thomas Rutz**  
Head of Currency Management  
Clariden Leu Investment Products

Carry trades are done by borrowing in a currency of a country that has low interest rates, and investing the borrowings in a currency or other asset yielding higher returns. They may be “undone” by market volatility, and violent moves that prompt investors including hedge funds to unwind such trades.

The term “carry” refers to the difference between the income from a security and the financing cost. The word is also associated with futures contracts, where a positive or negative “carry” implies that the futures price is lower (positive) or higher (negative) than the current price of the underlying security.

Much of the focus of late has been on the yen carry trade, which has been used widely at least since the Japanese currency entered a declining trend in the spring of 1995, which lasted until mid-1998. Investors borrowing cheaply in the Japanese money market would invest the proceeds in higher-yielding assets, including U.S. Treasury bonds and emerging market securities. The yen tends to be a popular borrowing currency because Japanese interest rates are among the lowest in the world. Other popular borrowing currencies include the Swiss franc.

Not only currency traders engage in carry trades. About 20% of lending in the Austria, excluding bank borrowing, was made in low-interest foreign currencies, according to the Austrian central bank.<sup>1</sup>

“Foreign currency loans involve a number of additional risks to the borrower as well as the lender,” according to the Austrian central bank in a statement posted as a warning to domestic borrowers on its Internet page, who have taken up loans to finance mortgages, for example, in foreign currencies. The bank cites “rational herd behavior” as one reason why such borrowings are popular.

As to the yen, a strategy of borrowing in yen and buying dollars, for example, has worked well with occasional interruptions for several periods in the past decade. All an investor had to do was borrow in yen, and invest, for example, in U.S. Treasury bonds to profit from the interest rate differential. For example, in June 2006, the U.S. 30-year bond yielded close to 5.30%, while the Bank of Japan’s discount rate was at nearly zero (0.1%).

Interruptions of course do occur, most notably in 1998 when Russia’s ruble devaluation and debt default on sovereign debt shocked markets, and sent the dollar lower versus the yen. The impact was also felt in stock markets. In August 1998 the Standard & Poor’s 500 Index fell 15%. Investors including hedge funds suffered losses and had to unwind carry trades. The most well-known near-failure was that of U.S. hedge fund Long-Term Capital Management (LTCM). The fund was rescued by its investors, which injected \$3.6 billion to offset losses. The losses were magnified by leverage used to increase the size of LTCM’s bets.

Such leverage may also play a role in volatility seen whenever carry trades are unwound. As a result of carry trades being unwound by

market participants, the dollar slumped against the yen in one panicky week in October 1998, marking its biggest weekly drop in the U.S. currency since the end of the gold standard in 1971, according to Bloomberg.

Leverage today may be lower than when LTCM collapsed – about 50 times its capital – but given hedge funds' liking of carry trades, and the fact that hedge funds tend to be leveraged, when such trades are unwound, the impact on financial markets can be dramatic, and painful. In 2005 to the end of 2006, carry trades were in a sweet spot. The dollar rose 16% versus the yen in that period. The U.S. Federal Reserve also continued to raise interest rates, lifting its target to 5.25% by the end of June 2006. The Bank of Japan's main lending rate remained below 1%.

The popularity of carry trades in the past two years led to a build-up in speculative volume in yen-funded carry trades that rivaled the old highs of August 1998, according to estimates by Barclays Capital. ("Speculative" refers to trades that are not being used to hedge other positions). The high levels prompted Barclays to note that "the magnitude of yen-funded carry is reaching scary levels."

"Even if the macro environment remains benign for carry trades,

we cannot rule out the possibility of a sudden unwinding of positions that simply feeds on itself," Barclays wrote.

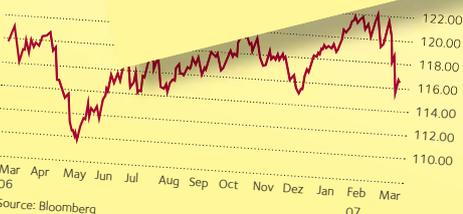
If history is any guide, it doesn't take much to spook investors. Iceland provided a catalyst that briefly rattled the market in early 2006. The country's debt had yielded nearly 11%, and provided a good source of returns for carry trades. Then ratings company Fitch downgraded its outlook for Iceland's sovereign debt, prompting a wholesale sell-off in that country's bonds. This, coupled with expectations that Japan would soon raise lending rates, plunged the carry trade market into a brief crisis.

Another shock was administered in early March 2007, as equity markets began to sell off. The yen leapt nearly 4% versus the dollar in a single week, between February 23 – March 2. It was a dramatic move, and led some experts to suggest that the carry trade was being seriously unwound. But as dramatic as the move was, it was still far less than the 16% jump the yen made in that one turbulent week in October 1998. The carry trade, it seems, is often pronounced dead. But it doesn't take much for it to spring back to life.

<sup>1</sup> Foreign Currency Loans in Austria, Oesterreichische Nationalbank.

Diary of a Trader: We stress that our FICTIVE trader, Mr. "Short," founder of FICTIVE HD Mega-Invest, transacts all business in a purely imaginary context. Any resemblance to any persons, living (or after recent market upsets, otherwise) are purely coincidental.....

USD/JPY



Source: Bloomberg

**JAN. - APR. 2006...** Same old, same old. After being the first trader to figure out it was time to short the Icelandic krona, earning decent cash, I turned around and MASSIVELY bought BRASILLIAN REALS vs. SWISS FRANCS to Christmas and made a bundle. Late December I went long Thai baht vs. yen. A GENIUS CALL. The baht surged.

**MAY 2006...** I sat watching the surf on Bondi Beach. I got my board and paddled out, ignoring a Great White nosing around. I stayed out of major currencies and took a small bet on the Egyptian Pound. Another GENIUS CALL. At least, I didn't lose anything. Swimming with the sharks was more fun than the markets in May '06. Investors hoping to borrow cheap Japanese yen and invest in U.S. DOLLARS, STOCKS, OR GOLD had

been badly hurt. In one month the dollar lost almost 7% of its value against the yen. The S&P 500 Index fell in less than three weeks by 5%. And on May 20, gold had its biggest weekly drop since February '83.

**JUNE 2006...** Preparing to do some base-jumping in Brazil, I took a little time to call a trader who quoted me for spot USD/JPY a rate of 112.20/30. I bought 100 million dollars versus yen at 112.30. The price charged on overnight loans by U.S. banks was 5%. Japanese's overnight lending rate for yen was just 0.25%. Therefore, I decided to roll the trade forward for nine months to February 28, 2007. This compensated me with another 400 pips!!!

**OCT. 2006...** I'd had earned a BUNCH OF MONEY in my dollar/yen trade. The dollar had risen more than 6% against the yen during that period. A hunch told me it was time to buy gold.

**MID-DEC. 2006...** By mid-month I was in the dollar/yen trade again, as were many of my fellow HEDGE FUND colleagues.

**JAN. 2007...** After the dollar broke all technical levels and started GAPPING HIGHER – above the 200-day moving average – well, it was clear the carry traders were back to work. By end-January, the dollar strengthened to 122 yen, up from 116 in December. Then, markets hit a rough patch...

The last entry by our fictive trader, typed in haste, reads "JPY... Sell!! NO!! BUY!!! No, wait. SELLLL!!!! Then, only... "the horror..." Or, perhaps he'd meant only "U.S. housing starts." ■

# Calculated Risks

Expected Returns: from market view  
to active views, or shifting with the  
Black-Litterman Distribution:

$$X|v \sim N(\mu_{BL}, \Sigma_{BL})$$
$$\mu_{BL}(v, \Omega) = \mu + \Sigma P' (P \Sigma P' + \Omega)^{-1} (v - P \mu)$$

By Alice Ratcliffe, with Felix Csajka, Antonio Oro and Juri Sarbach



Juri Sarbach, Felix Csajka, Antonio Oro  
Clariden Leu Investment Products

Photo: Alexander Sauer

**Felix Csajka** graduated from Zurich's Federal Institute of Technology (ETH). He received a doctorate from the University of California at Berkeley in statistical physics, and did post-doctoral research at the Max Planck Institute in Berlin. A Chartered Financial Analyst since 2005. He joined Bank Hofmann in Zurich in 2001, which merged with four other firms into Clariden Leu in 2007. His hobbies include drawing, music and tournament chess, where he coaches a junior chess team. Born in Zurich. Nationality Swiss.

**Antonio Oro** received his first degree with a specialization in math and science. He has a second degree in engineering, with a specialization in data analysis and process design. Founded his own investment company in 1998. He sold the company in 2002, and joined the bank in 2006, after finishing master's thesis (Early detection of turning points in time series with filters). Hobbies include hiking, mountain biking and reading. Born in Visp, Switzerland. Nationality Italian.

**Juri Sarbach** received his master's degree in economics and finance from the University of St.Gallen. He joined Bank Leu in 2003, which was part of the merger to form Clariden Leu in 2007. At Leu he did time series analyses, and built asset allocation models. Besides working to perfect the factor model used at Clariden Leu Investment Products, his hobbies include growing bonsais, playing badminton, and riding his 1961 Vespa. Nationality Swiss.

**“T**here’s what we call the purely theoretical approach to designing a portfolio,” says Felix Csajka, a fund manager at Clariden Leu in Zurich specializing in quantitative methods. Then, there’s the more practical route, using techniques such as random walks – a mathematical way to guess, for example, how many butterflies are likely to be found in a particular acre of woodland at 12 noon on a given day, versus the mean average based on a standard population of  $10^{10}$  butterflies – a sophisticated method that also may be used to weight stocks according to optimum risk and return.

To employ the latter method, it helps to be an equity analyst. With some computer expertise, of course. Oh, yes, and a background in quantum physics doesn’t hurt, either.

Csajka (pronounced CHAI-ka), who possesses all three attributes plus a talent for chess, heads a team of quantitative specialists. Using complex mathematical models to build a portfolio is like a “walk

through a huge data jungle. With the computer, you are able to walk through this data ‘jungle’ more precisely. A traditional analyst may be less able to spot in this jungle what a quantitative analyst sees,” he says.

His team buys and sells stocks based on suggestions produced by computer programs, an approach known as quantitative investing. The job of quantitative analysts – “quants” – is to design the computer programs and models that will select stocks.

Such models also allow a manager to sift through thousands of securities and pick out ones that have the characteristics, or “factors” expected to deliver high returns, based on a specific risk profile.

“Quant funds have a lot of intuitive appeal,” says Reginald Laing, a fund analyst at Morningstar, Inc. in Chicago. A process that takes a computer a few minutes “would take a team of analysts weeks – time for market conditions to change and discovered opportunities to disappear.”

The first step typically, is to screen or rank the stocks. Then, a portfolio of stocks is built, based on that initial screening, using combinations that work together to provide the desired risk and return.

For a quantitative discipline, the business itself is seriously lacking in numbers that would give any idea how much money is managed with these strategies. It is hard to even say precisely what is, and what is not quant.

“If you put ten people in a room, you’re going to get eleven definitions of quantitative investing,” says Tanya Styblo Beder, who ran Tribeca Global Management LLC, Citigroup’s multi-strategy hedge fund until September 2006. Prior to joining Citi, she also built a quantitative division at Caxton Associates LLC, a New York-based hedge fund. She believes that trading based on computer systems today “accounts for a good one-third of trading volume today in equity markets.”

“You have so many quantitative models now identifying aberrations in the market



## Specialists

that things cannot get too out of line. That has a lot to do with why volatilities may remain permanently lower," according to Beder.

Quant funds are nothing new. Usually cited as the first is an index fund set up in 1971 by Wells Fargo Bank. The fund invested in equal weights in all New York Stock Exchange equities, and "implementation proved to be a nightmare," according to John C. Bogle, the founder of Vanguard Group, based on remarks made in a speech.

Today, advances in computing have made quantitative-style investing more accessible to a growing number of managers. "Ten years ago, you would have needed a supercomputer to do what we're doing today," says Antonio Oro, an engineer in data analysis and statistics, who joined Clariden Leu Investment Products after he met Csajka in 2006 while working on a research project.

Csajka's team uses PCs and Macs with specialized software focused on numerical

mathematics and statistics. Besides the heavy number crunching, such tools also are used in tracking risks, or to "visualize" performance.

The third member of the team, Juri Sarbach, was hired by Bank Leu in 2003, now part of Clariden Leu. Based on his experiences at Leu doing time series analyses and constructing asset allocation models, he aims to "perfect" the screening process used at Clariden Leu. In his spare time he attends to bonsai trees, a hobby requiring inhuman patience.

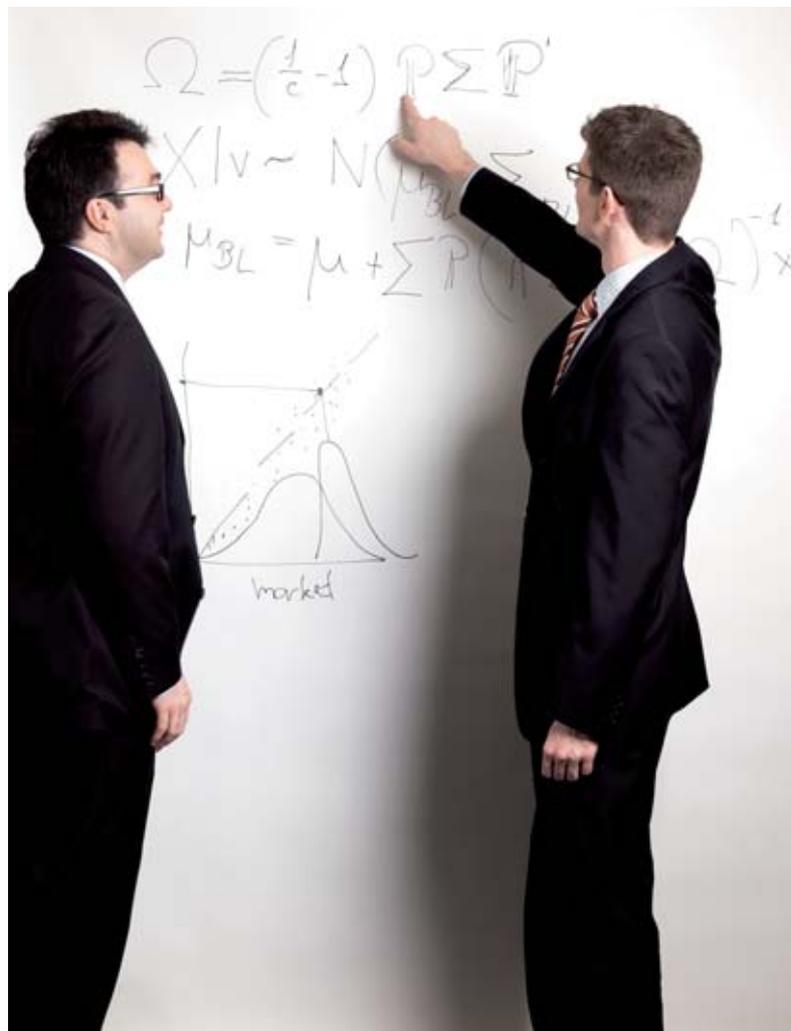
The extent to which computers are used to determine the choice of assets in a portfolio varies. In a pure quantitative fund, stock picks, for example, are left up to the computer once the management team determines the selection criteria and risk profiles of assets, and the manner of the final selection process. Other approaches may combine elements of both quantitative, and traditional stock-picking techniques.

There are many reasons why quantitative

investment styles tend to attract investors, and why money managers like them. One is that the models should work just as well managing \$10 million, \$100 million or \$1 billion, providing they invest in a liquid market. A good model should work for all managers, too. In addition, patterns in securities price fluctuations also may be hard to spot without sophisticated programs.

Not surprisingly, perhaps, the history of quantitative investing includes those who look at life a bit differently. Benoit Mandelbrot, who also worked for IBM, used quantitative methods to identify patterns in cotton prices in the 1960s. He is best known for his work in fractals which he harnessed to explore the shape of coastlines, the properties of turbulence, and which led him to train a computer to draw artificial mountains.

Harry Markowitz, the Nobel Prize-winning economist, is cited as one of the first to develop modern portfolio theory, starting with an article he published in 1952. He also



helped to develop a computer programming language in the 1960s. The language, SIMSCRIPT II.5 “still has a fair number of users,” according to remarks published on the Internet, citing Markowitz. Today there also are more sophisticated models around, including those based on the Black Scholes model for pricing options, and the Black-Litterman Global Asset Allocation Model, named after its developers Fischer Black and Goldman Sachs partner Robert Litterman.

With computing expertise, and perhaps luck, some quants who have founded hedge funds have become very rich. James Simons

**“What we are trying to achieve is a portfolio that incorporates the quantitative favorites, but also has an attractive risk profile.” Felix Csajka**

taught mathematics at the Massachusetts Institute of Technology and Harvard University, ran the math department at the State University of New York at Stony Brook, and also won the American Mathematical Society’s Oswald Veblen Prize in Geometry in 1976. As chairman of Renaissance Technologies Corp., Simons earned an estimated \$1.5 billion in 2005, according to Institutional Investor’s Alpha Magazine.

The lure of wealth, and perhaps the chance to get off the beaten intellectual track into, say, path integrals, are attracting the best and the brightest to the business. Alphasimplex, a hedge fund founded by Andrew Lo, an MIT professor, seeks to hire “research scientists, systems engineers, web developers, and graduates with backgrounds in bioinformatics, cognitive neurosciences, electrical engineering, and experimental physics,” according to its Web site.

The process of setting up a quantitative investment follows a fairly standard procedure. In most cases, a manager chooses a broad universe of stocks, like the Standard & Poor’s 500, then the computer screens these stocks to rank them in terms of relative attractiveness, based on a variety of factors that may include valuation, recent performance, expected earnings growth and balance sheet strength. Once the selection has been narrowed, the manager can start combining stocks that work together well, a process called portfolio optimization.

“What we are trying to achieve is a portfolio that incorporates the quantitative favorites, but also has an attractive risk profile,” says Csajka. “If two stocks are highly correlated, you may not want to overweight both of them, because you will increase the

stock-specific risk in your portfolio.”

One way to choose the best combination is to design and start with a risk model. This step may result in the traditional Markowitz approach to find an optimum portfolio. To go about finding an optimum solution, one may employ a traditional computer algorithm to arrive at the best possible risk/return combination. Algorithms, used as early as Euclid over two millennia ago to demonstrate that the number of prime numbers is infinite, are used today in everything from encryption devices to computer-based graphic design. In some ways they resemble a cooking recipe.

Today, Markowitz’s mean-variance optimization is rarely applied in a world where money managers must operate within practical constraints, perhaps using only long positions, or reducing the number of trades to minimize cost, or to track the performance of an index. In such “non-linear” optimization problems, a more refined approach is employed, where the computer strolls through different stock combinations, randomly changing the weightings of stocks to find the best combinations.

These Monte Carlo methods (the name derives from roulette, a “random number generator”) are popular in physics and are based on stochastic calculus, an area of mathematics devoted to randomness and probability. Besides financial theory, stochastics have been used to compose music (the kind that incorporates chaos), to guide airplanes by autopilot, and to price insured risk.

In his book, *My Life as a Quant*, Emanuel Derman, a theoretical physicist who later headed the quantitative strategies group at Goldman Sachs & Co, describes how Fischer Black and Myron Scholes’s 1973 landmark study on using stochastics was considered “sufficiently arcane that it took several years” to get it published. Together with Robert Merton, the three shared the Nobel Prize in 1997. Today nearly all mathematically literate financial practitioners are familiar with the Black Scholes formula, known most widely for its applications in options pricing models.

Even with lots of computing power, assembling a proper portfolio using Monte Carlo techniques isn’t easy. “This latter method is something that requires a lot of diligence and a lot of experience in order to find combinations that are stable in practice, and which also are reasonable in a portfolio,” Csajka says. “In the end, you have a portfolio

that balances out the risks while selecting those stocks perceived as investment opportunities.”

Quantitative models do have some drawbacks. Because they rely in part on historical data, they may need more time to react to dramatic market moves. Some stocks also tend to show up frequently in quantitative portfolios because they conform to the usual variables that computer models use to vet stocks.

Quantitative strategies also may benefit in periods when value-style investing works best. That style leads managers to look for stocks that tend to trade at valuation discounts to where investors believe they should be, as opposed to strategies where managers seek stocks with strong growth potential. “It’ll be interesting to see how popular quant funds are in periods when growth surges ahead of value,” says Morningstar’s Laing.

One characteristic which pure quant investing prides itself on, is eliminating the emotions that may distort judgment among investors.

Quantitative funds appeal to investors partly because “they strip away at least part of the human bias that trips up some active managers, who may buy into market trends at precisely the wrong time and overlook real values,” says Laing.

This isn’t always easy to accept, even for quants. “It’s sometimes hard to believe the computer likes companies I don’t like,” says Clariden Leu’s Oro. “When that happens, I just close the spreadsheet and go away for a while.” ■



Continued from page 9

**S**hipping ports: Total U.S. container traffic is forecast to increase to 388 million tons by 2020, more than two times the level of 2000, according to the American Association of Port Authorities.

Port traffic has expanded in the past decade, thanks to booming global trade. In North America, so-called throughput is expected to exceed 80 million twenty-foot equivalent units (TEU) by 2020. That would be nearly double the volume of 1995. A single TEU is big enough to hold, for example, about 15,840 1-liter bottles of wine, or 8,928 frozen chickens, according to Port of Tacoma spokesman Rod Koon.

Regarding U.S. port assets, "the level of interest is at an unprecedented level," says Neil Davidson, ports analyst at Drewry Shipping Consultants Ltd. in London. "The prices being paid for port assets are at an all-time high."

Recent transactions include Hapag-Lloyd, the shipping company owned by German tour operator TUI AG, which said in February it will sell its 80% stake in Montreal

Gateway Terminals to U.S. investment bank Morgan Stanley. The transaction was priced at "close to" 300 million euros, roughly the same as the debt on the company's balance sheet that the sale eliminated, according to one source with knowledge of the transaction.

U.S. ports need to spend to increase efficiency, in order to generate more profit. "In terms of overall productivity per acre,

**"Interest in U.S. port assets is at an unprecedented level."**

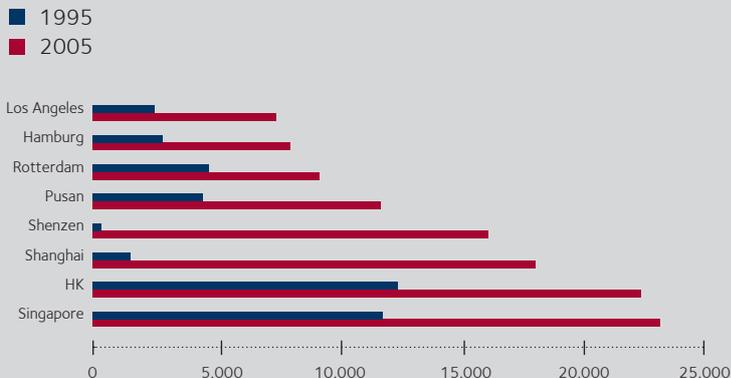
**Neil Davidson, Drewry Shipping Consultants**

the U.S. ports are constrained by antiquated operating rules," says Ann-Marie Lundberg, a consultant at Tangent Services Inc., in Portland, Oregon.

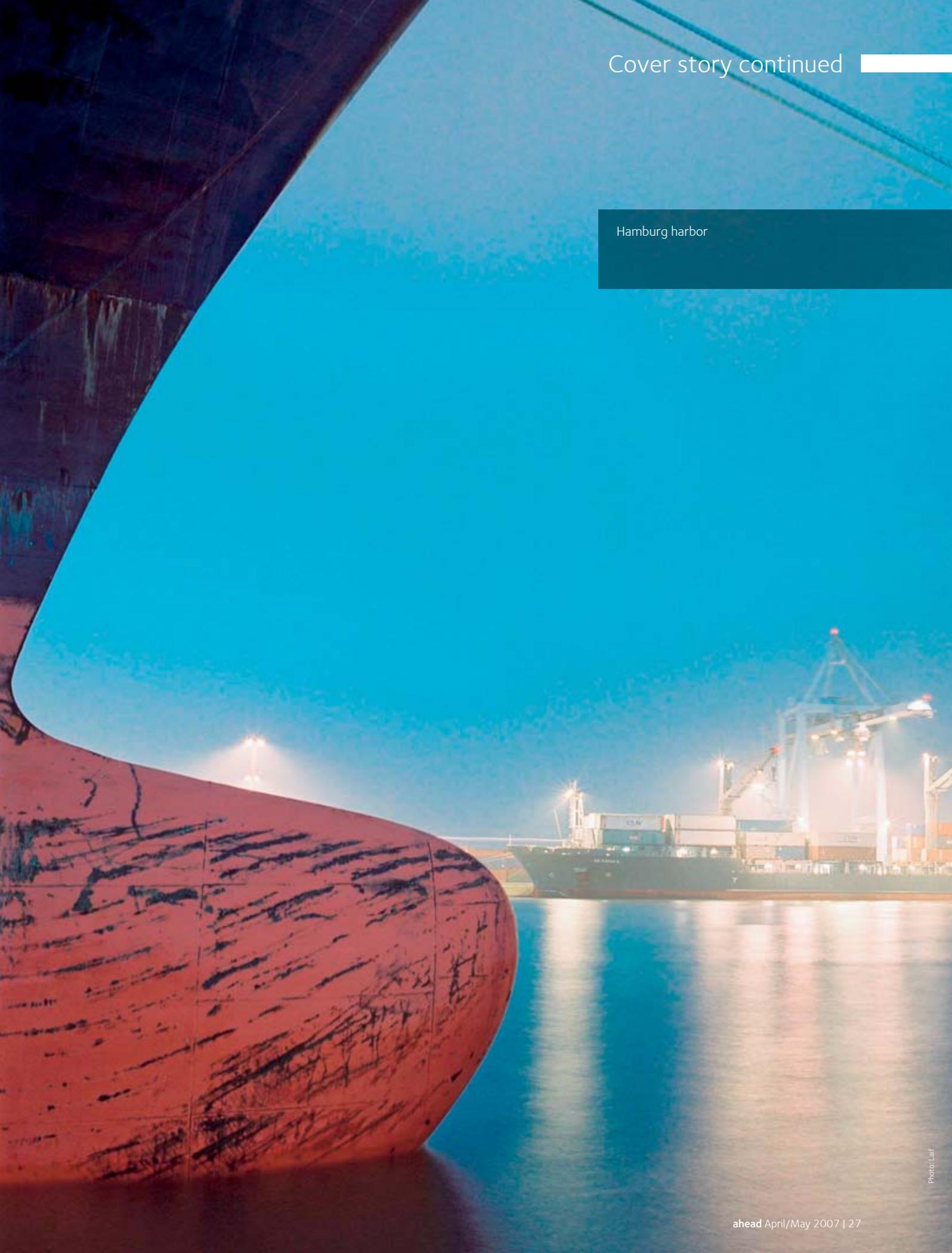
Meanwhile, rapid expansion of traffic in and out of ports as trade flows increase has left "the road and rail network at, or almost at capacity in many corridors," she says. As a result, "the various departments of transportation in the West Coast states are aggressively looking for funding for infrastructure improvements to corridors in and out of ports."

**Growth of traffic in major global shipping ports in TEU (20-ft equivalent units)**

Source: Containerisation International Yearbook, German Federal Statistics Office



Hamburg harbor



# “South Africa will organize a super World Cup.”

Markus Sieglar, Director Communications of FIFA



Markus Sieglar  
FIFA Spokesman



Former South African President Nelson Mandela, centre, Archbishop Desmond Tutu, celebrating FIFA's World Cup decision.

## Why South Africa in 2010?

“Football is the absolute number one national pastime in South Africa. Due to the history of the country, there were deep cultural divides, also in sports. Gradually the different sides are starting to get closer together, and to mingle. People are crazy about football there, and we will have a fantastic World Cup.”

“It will be different than the previous World Cup in Germany. South Africa shouldn't simply try to copy Germany. Rather, it should have a South African World Cup. It may be more colorful, and louder perhaps. It will have different music, a different ambience. It should be African, with its own identity, and its own culture – really, the people there are crazy for football. Absolutely.”

## Will South Africa truly be ready in time?

“South Africa will be ready. There's no question about it. One problem already has been solved. That concerns the decision to build five new stadiums, and renovate five. In terms of the schedule, we are completely on track. That has to be the case, because in 2009, the Confederations Cup will be held in five stadiums. This skepticism

among those in the northern hemisphere is unfair and not justified. South Africa is absolutely capable of it, and will organize a super World Cup.”

## What's the advantage for South Africa, apart from the matches themselves?

“You can compare it to holding the Olympic Games. If you consider Athens, for example, prior to the Olympic games in 2004 – a complete traffic nightmare. Holding the Olympics there also meant that besides sport complexes, the city built up its infrastructure: the metro and highways, for example.”

“And, consider the World Cup in Germany. It was the best, most successful image campaign you could imagine, one that would not have been possible with conventional means. The World Cup also added to Germany's gross domestic product. Then, there were all the hotel bookings, and the many services that go along with a World Cup, including the catering, and the restaurants. In other words, you must look beyond the sport and see all the other benefits for the country.”





Photo: Getty Images/AFP

Under-17 player Moses Barnett tries out the new Wembley Stadium

## **S**tadiums: Bigger is always better.

"The scale is extraordinary – no other building or public space ever brings together 80,000 to 90,000 people, all in each other's view," says Michael Weinstock, academic head of the Architectural Association School of Architecture in London. "Stadiums are driven by big cultural forces – countries and governments in competition with each other – and although in all countries stadiums have to go through 'planning,' there is usually very little in planning theory or in planning guidelines that deals with such large buildings and the cultural forces behind them."

Britain's Chancellor Gordon Brown, possibly the country's next prime minister, announced during a tour of nearly-finished

Wembley Stadium that his country would make a bid to host 2018 soccer World Cup. England already is the site of the Summer Olympics in 2012. Wembley is the world's largest covered football stadium, according to the architects, Foster + Partners. Multiplex Group of Australia, which built the stadium, handed over the keys in March. Completion was about one year behind schedule.

"Wembley has been fraught with problems," said Andrew Thornley, a professor at the London School of Economics. "The main issue seems to be difficulties between the main contractors and sub-contractors and they are all blaming each other. The good aspect is that it is not an isolated project. It is located in a run-down area and linked to regeneration plans."

Besides rebuilding Wembley, between 70 million and 80 million pounds (\$135 million and \$155 million) have been spent on infrastructure to upgrade the surrounding area, including adding lifts, widening stairs and lengthening platforms at three Underground stations, building a new footbridge, and upgrading roads around the stadium.



**Airports:** About 120 major new airport projects are now under construction, or in final stages of completion, according to Momberger Airport Information.

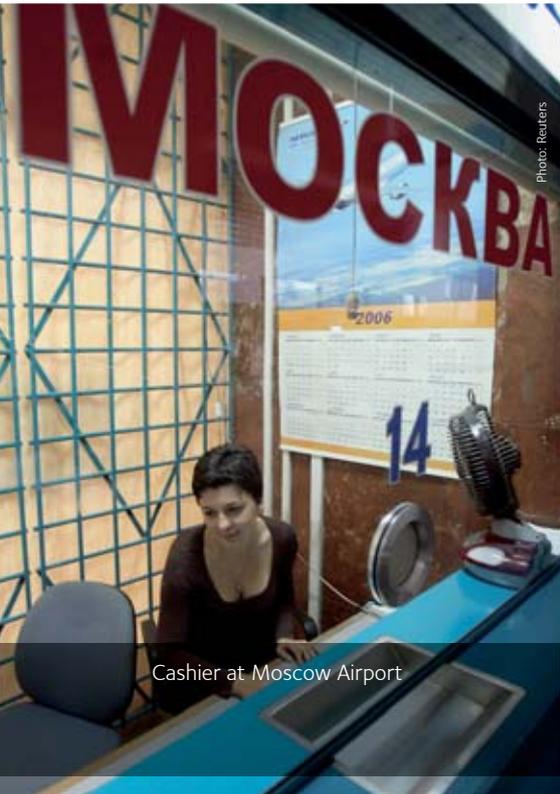


Photo: Reuters

Cashier at Moscow Airport

King, head of the Dublin Chamber of Commerce, complained to the Irish Independent newspaper that "business people are continually embarrassed about bringing visitors from abroad through Dublin Airport." A spokesman at the Chamber said Mr. King's remarks referred to delays in getting the project started, and failure to plan for projected increases in demand.

Zina Psiola, a fund manager at Clariden Leu who travels through airports in central and eastern Europe, says these often lack anything but very basic amenities, and have little or no mechanization for baggage delivery. Service is now done with "cheap labor."



Photo: Alexander Sauer

**Zina Psiola**  
Russia Specialist, fund manager  
Clariden Leu Investment Products

**At Eastern European airports, service is now done with "cheap labor."** Zina Psiola, Clariden Leu

It is now working on two airports using such arrangements. That follows a similar financing for an air cargo terminal in Pulkovo airport, St. Petersburg. Financing for all three projects in total is about 300 million euros (\$400 million), including about 100 million euros (\$133 million) from the EBRD. Private investors and commercial banks are contributing similar amounts.

"Russian air traffic will increase enormously in the future. Substantial improvements are needed in the modernisation of the terminals and in ensuring the safety and comfort of the passengers," Puliti says. "There may be as many as a dozen airport projects financed through public and private partnership arrangements in Russia in the next five years," including those already built. Building new airports and increased air traffic also will increase the need for other services, he says.

In December 2006 the EBRD also invested \$10 million in the form of equity in Sky Express, the low-cost Russian airline. The total plan allows for up to \$20 million to be invested.

"We do a lot of private equity deals nowadays," Puliti says, adding the EBRD is negotiating two more private equity deals in Russia that may be announced by the middle of 2007. The EBRD is also lending 100 million euros (\$133 million) to Moscow-based Sukhoi Civil Aircraft company, which is expected to produce its first regional jet in 2009, according to Puliti.

The EBRD will also focus on improving Russia's rail and port capacity. Russia is the world's second-largest oil producer after Saudi Arabia, and has the world's largest proven natural gas reserves, and transporting energy is key to its economic development. ■

Hochtief Airport, a fund run by German construction group Hochtief AG, is taking a stake in Budapest's airport. American International Group Inc. and a consortium that includes General Electric Co. and Credit Suisse Group, Clariden Leu's parent, agreed in December to buy London City Airport. The price paid was estimated at 750 million pounds (\$1.5 billion), according to the Financial Times newspaper. That was more than 30 times the price at which the former owner, Irish investor Dermot Desmond, paid for it in 1995.

Building is going on everywhere. European projects underway include \$10.6 billion for London's Heathrow, which the Sunday Times in December labelled "the world's worst airport." Improvements there include Terminal 5, slated to open in March 2008. Dublin also is upgrading its airport. Ronan

The Russian government plans to increase spending on airports by 25% this year, Bloomberg reported.

"In Russia, there has been a huge interest by large private corporations in the past few years to get involved in the development and operation of airports," says Riccardo Puliti, who heads the European Bank for Reconstruction and Development's (EBRD) team of transport specialists within the Bank's infrastructure division. He spoke in a telephone interview in February with Clariden Leu. "For the time being, most of these corporations are Russian. This trend shows that also in the Russian Federation there is a perception that private companies have better project capability than the public sector."

The EBRD is encouraging the development of partnerships with private investors.



## Overview Clariden Leu Investment Products Events 2007

### Road Shows for industry professionals in **Switzerland, Liechtenstein**

#### June 18/22

Monday	18th	LUGANO	12:00-13:00	Hotel Lugano Dante
Tuesday	19th	BASLE	12:00-13:00	Hotel Victoria
Tuesday	19th	BERNE	17:00-18:00	Hotel Bellevue Palace
Wednesday	20th	GENEVA	12:15-13:15	Hotel Mandarin Oriental
Thursday	21st	VADUZ	12:00-13:00	Gasthof Löwen
Friday	22nd	ZURICH	12:00-13:00	Park Hyatt

#### September 17/21

Monday	17th	LUGANO	12:00-13:00	Hotel Lugano Dante
Tuesday	18th	VADUZ	12:00-13:00	Gasthof Löwen
Wednesday	19th	BERNE	12:00-13:00	Hotel Bellevue Palace
Wednesday	19th	BASLE	17:00-18:00	Hotel Victoria
Thursday	20th	GENEVA	12:15-13:15	Hotel Mandarin Oriental
Friday	21st	ZURICH	12:00-13:00	Park Hyatt

#### November 26/30

Monday	26th	ZURICH	12:00-13:00	Park Hyatt
Tuesday	27th	VADUZ	12:00-13:00	Gasthof Löwen
Wednesday	28th	BERNE	12:00-13:00	Hotel Bellevue Palace
Wednesday	28th	BASLE	17:00-18:00	Hotel Victoria
Thursday	29th	GENEVA	12:15-13:15	Hotel de la Paix
Friday	30th	LUGANO	12:00-13:00	Hotel Lugano Dante

### Road Show for industry professionals in **Austria**

#### May 3 (topic: Russia)

Thursday	3 <sup>rd</sup>	VIENNA	12:00-13:00	Hotel Sacher
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Clariden Leu Road Shows are aimed at financial professionals, including bank advisors, portfolio managers, analysts, independent asset managers, pension fund managers, and other institutional investors. Events are subject to change. Please check our Internet page for updates.

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