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Japan: The Business Aftershocks

From Chips to Banks, Companies Scramble

By ANDREW DOWELL

Japan's devastating combination of earthquake, tsunami and nuclear accident was a wakeup call reminding companies across the world just how much they rely on the island nation.

Tracing the Supply Chain

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Reuters

Many global industries count on Japanese companies for the raw and processed goods they use to make their finished products. Read more.

Made in Japan

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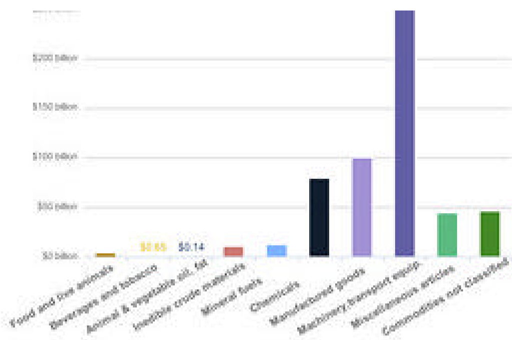


See details on Japanese exports.

Counting on Japan

A sampling of major U.S. companies that get revenue from Japan.

Company	Percentage of Total Revenue From Japan Segment	Fiscal Year Ended
Tiffany	18%	Jan. 31, 2011
Freeport-McMoRan	18%	Dec. 31, 2010
Boston Scientific	12%	Dec. 31, 2010
IBM	11%	Dec. 31, 2010
Corning	11%	Dec. 31, 2010
Intel	10%	Dec. 25, 2010
Texas Instruments	10%	Dec. 31, 2010
Applied Materials	8%	Oct. 31, 2010
Abbott Laboratories	6%	Dec. 31, 2010

Note: Percentages are rounded to nearest whole number.

Source: WSJ research

On the demand side, the country accounts for nearly 9% of the world's economic output and has been an important entry point in Asia for companies from banks to retailers. The destruction disrupted sales, dislocated employees and will likely produce lingering caution among consumers.

But it is the supply side that has been the biggest source of surprises. Economists who thought they had a handle on the likely impact found, on closer inspection, that Japan was an important source of all manner of advanced components used heavily in Asia and elsewhere to assemble final goods.

Live Chat

Join WSJ economics editor David Wessel for a live chat about the corporate imact of the Japan quake today, March 25, at 1:30 p.m. ET. Ask your questions now.

Japan makes 60% of the world's silicon wafers—the building blocks of computer chips. The shutdown of two factories by the earthquake took out a quarter of the world's supply. Credit Suisse says the country also makes 90% of a substance called BT resin used to make printed circuit boards.

Inventories of each seem to be holding up, but other disruptions had a more immediate impact. The world's automakers, for instance, had trouble coping with the shutdown of a Hitachi Ltd. factory north of Tokyo that makes airflow sensors used to measure the amount of air coming into engines.

Hitachi makes 60% of the world's supply. This week, in a modern "for lack of a nail" story, General Motors Co. was forced to shut a plant in Louisiana, and Peugeot-Citroen had to cut back production at most of its European plants.

Producers in a variety of industries are still sorting out the possible impacts to their supply chains and scrambling for alternative parts or suppliers. Many understand the impact on their own supplies, but it's trickier trying to get a grip on disruptions to their suppliers' suppliers.

Ultimately, the pace of recovery in Japan will determine the severity of any shortages and the scale of the damage to businesses around the world.

Japan is the world's fourth-largest exporter, and companies like Caterpillar Inc. use the country as a platform for manufacturing equipment that they then sell to China and elsewhere.

JAPAN: THE BUSINESS AFTERSHOCKS

- **Economists React: Japan's Unique, Uncertain Challenges**
- **Wal-Mart Japan: A Shift Into Crisis Mode**
- **Analysis:** Japan Will Rebuild, but Faces Daunting Tests
- **Economists React:** Japan's Unique Challenges
- **Some Fords Won't Be Painted Black**

Some companies that make construction machinery could get a boost as the country gets deeper into the hard work of rebuilding. Some estimate the tab could run to $200 billion. The Japanese government will pay much of it, but insurance companies might be on the hook for as much as a fifth of the total, by some estimates.

Here's how major industries have been affected by the disaster.

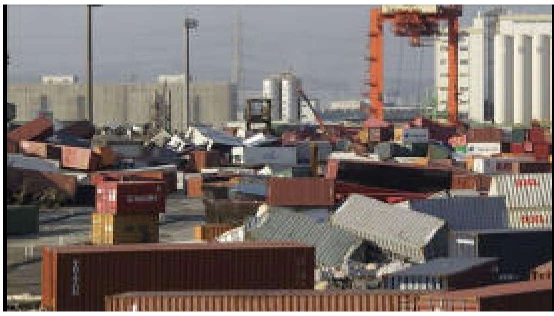
Chips

Makers of computer chips confront several problems. Assuming those in the quake zone can restart their factories and keep them running—far from a given, amid power-supply problems—they face potential shortages of raw materials and customers, whose factories may themselves be shut down or hard to reach.

- **Chip Makers Slowly Resume Output in Japan**

One of the biggest wild cards is the supply of silicon wafers, disks the size of dinner plates that are the foundation of chip fabrication. Research firm IHS iSuppli estimates that Japan accounts for about 60% of the world's supply; two factories accounting for about 25% of wafer shipments were shut down following the quake.

"That is a long-term type challenge," said Paul Reilly, executive vice president and chief financial officer of Arrow Electronics Inc., one of the largest chip distributors. "We are watching it very closely."



It's a small country with a super sized role in the global supply chain. Now industries large and small are getting a reality check on just how much they rely on Japan. WSJ's Dana Mattioli explains which businesses are scrambling to adjust most.

Most chip makers keep multiple weeks of inventory of wafers on hand. The potential impact on these companies depends on when wafer makers return to full production and how quickly alternative wafer factories can gear up.

So go the uncertainties affecting thousands of individual component types, all with different levels of finished inventory.

Renesas Electronics Corp. has eight plants in the broad area affected by the quake in various stages of recovery. The company is the world's largest maker of microcontrollers, chips used to control electronic operations in cars, consumer devices and thousands of products.

ON Semiconductor Corp., another company that sells chips for a wide array of applications, has six sites in the quake area that have mainly struggled with power interruptions.

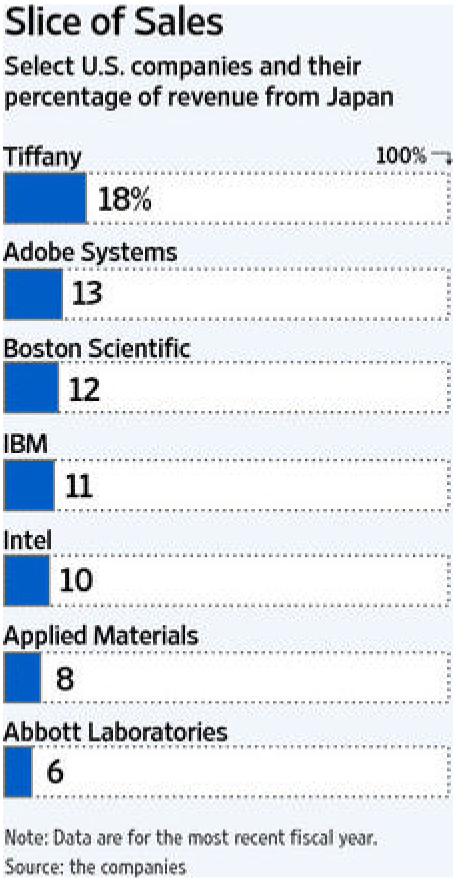
Toshiba Corp. and partner SanDisk Corp. largely escaped problems at their factories for making flash-memory chips used in popular products like Apple Inc.'s iPhone and iPad. But another Toshiba chip factory was damaged, along with another for making liquid crystal display panels.

Texas Instruments Inc. has given one of the most detailed breakdowns of quake impact, saying a factory in Miho that accounted for about 10% of its 2010 revenue isn't likely to be shipping again in full volume until September.

—Don Clark and Lorraine Luk

Electronics

Japan is a breadbasket for the global gadget business, where many of the key ingredients for hot electronics are produced. Yet the biggest producers of videogame consoles, televisions and other devices remain uncertain how the recent earthquake there will eventually ripple through to consumers.



Electronics makers haven't yet cut production estimates because of the quake. But even companies that say they've experienced no disruptions from the disaster are careful to add the words "so far" to their assessments.

Nintendo Co., for example, is preparing for the U.S. introduction on March 27 of its Nintendo 3DS hand-held game player. The company says no one from the company was injured by the disaster and its facilities in Japan weren't damaged. "Business operations, including future product shipments, have not been significantly affected so far," Nintendo said.

Other hot devices, like Apple's iPad 2, depend on parts from Japan that are likely to be in short supply. The iPad 2 contains five components sourced from Japan, including flash memory chips from Toshiba and an electronic compass from AKM Semiconductor Inc., according to an analysis of the product by IHS iSuppli, though the firm says Apple could find some of the parts from manufacturers outside the country. Apple declined to say whether it has seen any impact from the situation in Japan. Apple's online store is showing a shipment delay of four to five weeks for the device.

Sony Corp. said operations at nine of its 25 plants in Japan, which manufacture products such as batteries, chips and home audio equipment, had been temporarily or partially suspended because of quake damage or power issues. Three have resumed some operations, but Sony is temporarily suspending operations at six other sites because of parts and component shortages. It aims to restart those operations as early as April 1. Sony doesn't expect overseas TV and PlayStation 3 shipments to be affected because they are manufactured outside of Japan.

Other factories that weren't directly affected by the disaster have suffered because of planned power outages and infrastructure issues. Sharp Corp. said its television assembly plant in Tochigi began resuming operations on March 15, but the hours have been shortened.

—Nick Wingfield and Yukari Kane

Autos

For more than two decades, Japan and its auto makers have been ascendant, grabbing share from their U.S. and European rivals, setting standards for quality and racking up huge profits.

- **Japan Parts Shortage Hits Auto Makers**
- **Driver's Seat:** Analysts Say Auto Parts Shortages Will Hit U.S. Soon
- **Toyota Plans for North American Production Cutbacks**
- **Toyota, Honda Delay Plant Restarts**
- **Nissan to Resume Production in Japan**

After the earthquake, however, Japan will find its position in the auto challenged. For the rest of this year, and possibly beyond, Japanese auto makers will have to focus their energies and resources on rebuilding at home, giving U.S., Korean and European rivals an opening to zoom ahead elsewhere, especially in emerging markets including China and India.

In the U.S., the playing field already has shifted, putting Japan's biggest auto makers on the defensive. Toyota Motor Corp., after its quality troubles last year, is losing share, mostly to Hyundai Motor Co. But Ford Motor Co. and General Motors also are reinvigorated. Together, they earned more than $10 billion last year.

The quake is causing difficulties for U.S. and European auto makers that depend on some critical, mostly electronic, parts made in Japan. But the impact should be short-term because the auto industry and its suppliers have significant regional operations. A great majority of the cars sold in North American are made there. The same is true of Europe, China, South America and other markets.

As a result, the quake's ripple effects will be muted outside Japan, and most auto makers will be able to get back to business as usual fairly quickly while Japan reels.

The quake is also a threat to the Japanese auto industry's greatest strength—exports. In 2010, 4.9 million new vehicles were sold in Japan, but Japanese auto makers produced and shipped nine million vehicles to markets around the world. No other auto-producing nation is so dependent on exports. With many plants are idled, that export business is up for grabs, at least temporarily.

Down the road, as more auto plants are built in low-cost labor markets, Japan's exports will come under more pressure. Its auto makers will have to consider whether they can continue to export from high-cost plants at home. The answer might be found Thailand, where Nissan Motor Co. preparing to do what was once unthinkable: export small cars to Japan.

—Neal E. Boudette

Steel

In 2010, Japan surpassed China to become the world's biggest steel exporter. Despite the drop expected in Japanese steel production as a result of the earthquake, the world's steel market is unlikely to see extended volatility in prices and supply.

Exports

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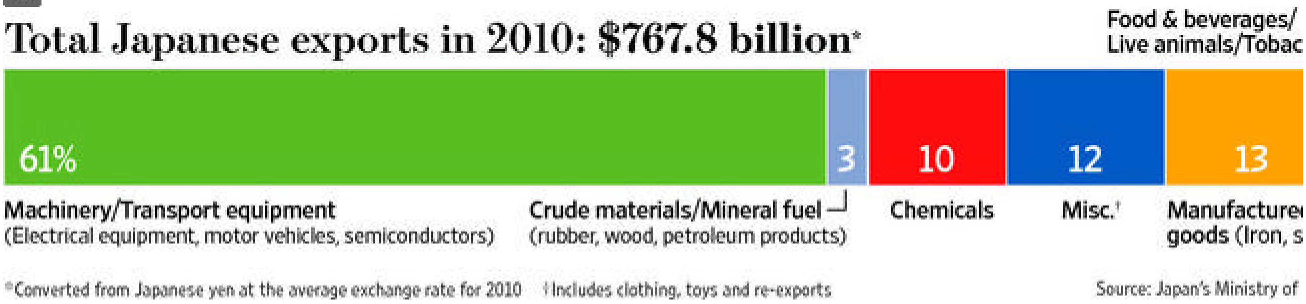

The reason: Mills in the U.S., Europe, Asia and elsewhere, still feeling the effects of the global recession, are under-utilized. Major mills in 64 countries are operating at about 82% capacity, according the World Steel Association.

Those plants are ramping up production. Shipbuilders in the Asia region, which have relied on Japanese steel makers, have asked South Korea's Posco, the world's third-largest steelmaker by output, to make more steel used in ship construction as a hedge against potential disruptions. And steel makers in China and Taiwan say their mills could supply those relying on Japanese producers.

Industry analysts are predicting Japan production could fall as much as 20%, or 24 million metric tons on an annual basis, within the next three months. Nippon Steel Corp. and JFE Steel Corp., Japan's two largest steelmakers, said blast furnaces temporarily closed by the earthquake are back in operation. But energy remains the big issue facing all of Japan's steel mills. Steel plants, especially electric-arc furnaces that melt recycled steel to make new product, consume huge amounts of electricity and have been affected by shortages as the nuclear crisis leaves a hole in the power grid.

Rio Tinto, the world's second-biggest supplier of seaborne iron ore, doesn't expect lower iron-ore sales, even though Japan, the world's second-largest buyer of the ore, may cut purchases in the short term. Other steel mills are likely to take up the slack, according to Sam Walsh, head of Rio Tinto's Australian-based iron-ore operations. And in the long term, he expects significant, steel-intensive rebuilding in Japan.

—Robert Guy Matthews

Manufacturing

The earthquake aftermath is likely to create at least minor problems around the world for equipment makers and buyers. But long term, some big industrial companies say massive rebuilding in Japan could lead to growth.

- **Caterpillar Warns of Supply Problems From Quake**

Japan-based companies, including Komatsu Ltd., Hitachi Construction Machinery Co. and Kobelco Construction Machinery Co., are the world's dominant makers of excavators and export them world-wide.

Some U.S. dealers have been warned that deliveries of excavators from Japan, at least in the short term, could take 60 or so more days longer than usual. James McCullough, chief executive of CNH Construction, said it isn't yet clear how serious the problem will become but that his company is looking at possible alternative suppliers.

At a trade show in Las Vegas this week, officials of Komatsu, Japan's biggest maker of construction equipment, said most plants in Japan were operating and others were preparing to resume operations. But Hisashi Shinozuka, president of Komatsu's U.S. unit, said 10% to 15% of Komatsu's 300 or so suppliers in Japan have earthquake-related problems that put production in doubt, at least temporarily. "We think we're okay for a while" with existing supplies, Mr. Shinozuka said. If certain key suppliers are out of action for three or four months, there may be a big impact, he said.

Caterpillar Inc. makes excavators, loaders and tractors in Japan and exports many of these to China and elsewhere in Asia. It says it hasn't had any significant disruption to its supply chain in Japan or elsewhere so far.

Caterpillar officials say rebuilding will spur demand for construction and power-generation equipment and may also help the company's sales of mining equipment if the disaster means less nuclear-power generation. Still, the disaster may help Japan emerge from years of economic stagnation, Doug Oberhelman, Caterpillar's CEO, said at a trade show in Las Vegas this week. "This could be a triggering event for Japan," he said.

Deere & Co. relies on Hitachi to supply major components for Deere-branded excavators. Deere has said it expects delivery delays for some construction excavators. Three of Hitachi's plants in Japan have resumed production, but two others remain idle with no timetable for restarting them.

—James R. Hagerty

Food

Fears of radiation contamination in Japan's food supply is crimping food exports from the country, even though scientists say the risk is almost nil for its biggest food export—seafood.

Japan is highly dependent on food imports and so the country exports relatively small amounts. According to the Japan External Trade Organization, Japan exported $3.27

billion of food around the world in 2009, with $1.47 billion, or about 45%, of that coming from seafood or its processed forms.

Many nations have put up stop signs against Japanese food imports. The U.S. Food and Drug Administration has banned dairy products as well as some fruits and vegetables from affected areas in Japan. The agency also said it will test all food and feed shipments, including seafood, from the affected area for radiation contamination.

Radiation will dissolve in seawater and poses little risk to marine life or commercial seafood fisheries, scientists say.

Singapore has suspended imports of dairy products, fruits and vegetables, seafood and meat from the four prefectures determined to be at contamination risk. Australia also has halted food imports from those areas. South Korea and Thailand, meanwhile, are expanding testing of Japanese foods.

In the U.S., seafood, snack foods and processed fruits and vegetables are the most common food imports from Japan, which make up less than 4% of the food imported to the U.S. from all sources. In 2010, Japan seafood exports to the U.S. totaled $246.3 million, a small fraction of $14.73 billion in globally produced seafood that the U.S. imported last year. The biggest category of Japanese seafood imports into the U.S. comprised mollusks, squid and octopus, totaling $85 million. Tuna accounted for a mere $4.3 million.

Many popular Japanese foods are actually produced overseas. Nissin and Maruchan ramen noodles and Kikkoman soy sauce, are made in several locations in the U.S. for distribution there.

Kobe, the home of Japan's famed and pricey Kobe beef, meanwhile, is more than 400 miles southwest of the crippled Fukushima nuclear plant and is considered out of the way of radiation leaks.

Retailing

Retailers are girding for a prolonged recovery in Japan following the country's recent natural disaster, which delivered a harsh blow to already uncertain shoppers there.

- **Adobe Warns of Japan Weakness**

Japanese consumers, known for their love of brands and labels, have long been the first target for many U.S. companies expanding into Asia. Tiffany & Co. has sold its wares there for nearly four decades. Coach Inc. entered Japan in 1988; Gap Inc. opened there in 1995.

Companies have since focused on faster-growing markets like China, as the Japanese market has matured. Still, Japan remains the biggest Asian presence for many brands, such as Polo Ralph Lauren Corp., which generates approximately 8% of its $5 billion in annual revenues there, according to Goldman Sachs estimates.

Many retail locations in Japan are much more productive than their U.S. counterparts, meaning the disruption is likely to have an outsized effect on profits. At Tiffany's Japan stores, which accounted for 18% of total revenue last year, sales per square foot were $3,500 in 2010—much higher the company average of about $2,600. The New York-based luxury jeweler has lowered its profit outlook by five cents for the current quarter to 57 cents a share.

Most U.S. retailers have concentrated Japanese operations in and around Tokyo, with only a handful of branches in the most affected areas of the country. Coach, which generated 18% of its total sales from Japan and has about 165 stores in the country, said locations representing less than 10% of its business there are in the affected region. Of Gap's 130-odd stores in Japan, only two are in the hardest-hit area.

The disruptions in Japan also will put a further drag on already sluggish sales of household products in developed countries. While consumer-product makers like Procter & Gamble Co., Colgate-Palmolive Co. and Kimberly-Clark Corp. garner just a fraction of their sales from Japan, the country's consumers are buyers of premium toothpastes, shampoos and cleaners, which can carry higher profit margins than products sold in fast-growing developing markets.

—Elizabeth Holmes

Chemicals

Japan's petrochemical makers sustained little permanent damage overall from Japan's natural disasters. JX Nippon Oil & Energy Corp., Mitsubishi Chemical Corp. and other manufacturers in the impact zone suspended operations to take stock of the situation and to cope with rolling blackouts caused by electricity shortages, which could continue to be a problem in coming months. But many plants are back online and slowly increasing production to make up for lost time.

The major exceptions are Maruzen Petrochemical Co. and Cosmo Oil Co., both of which have chemical refineries in Chiba that were damaged by fire and will most likely be down for extended periods of time.

Japan consumes much of its own output of basic petrochemicals like ethylene and polypropylene—building blocks for various kinds of plastics—and exports most of the rest to its Asian neighbors. Any decline in Japan's production of these commodity chemicals is unlikely to cause long-term shortages at home or in East Asia, a major market, because stocks are plentiful, chemical producers and brokers say.

More important in global trade are Japanese-made epoxy resins and other high-end plastics used in such products as electric motors, computer circuitry and automotive coatings. GM and other auto makers in the U.S. are already cutting production of some vehicles in the absence of some supplies from Japan. Computer makers also could start to feel a pinch.

Replacing homes and cars in the mostly rural areas devastated by the quake and tsunami will boost Japan's demand for petrochemicals ranging from butadiene, which is used in making molded plastic auto body components, to solvents and plastics used in the construction trades. But the rapid aging of Japan's population means that, despite any bump from the rebuilding effort, the company's chemical industry faces a shrinking domestic market.

—Ben Lefebvre

Power

The cracks exposed in the country's nuclear prowess could give fossil fuels a new luster, as prospects for an atomic renaissance fade.

The nuclear reactors knocked out by the quake account for 8% of Japan's electric capacity, and they won't come back for years. Natural gas will fill most of that gap, making Japan's consumption of the fuel grow by up to one third, the U.S. Energy Information Administration says.

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Burnt vehicles that were swept together in the port of Hitachi on March 12.

Japan is already the largest importer of liquefied natural gas, and the prospect of a spike in demand there is already awakening the LNG market from its recession-induced slumber. Extra shipments of LNG are making their way to the country—and

Russia has promised it would ship more natural gas to Europe through pipelines, freeing more LNG to travel by ship to Japan.

The crisis could result in a tightening of the global market for LNG starting in 2012, according to energy consultancy IHS Cambridge Energy Research Associates. Exxon Mobil Corp., Royal Dutch Shell PLC and other major Western energy companies that have placed big bets on gas because they were locked out of many oil opportunities in recent years will benefit.

That will come at the expense of nuclear power. Japan's crisis has dashed immediate hopes for a new dawn. Now Europe, China and the U.S. are closely looking at their nuclear programs, and investors are pulling back from utilities that rely heavily on nuclear.

Although the crisis could haunt nuclear power for a decade, in the long term its low greenhouse-gas emissions will ensure it a role in the global energy system, says Bill Colton, Exxon's vice president for corporate strategic planning. "I don't think society is going to walk away from it so easily," he said.

Japan will also consume more oil as it fires up its diesel-powered electricity generators, but the increase will be largely offset by reduced economic activity, and so crude-oil prices won't see much of a boost. The refining industry, however, will get a jolt from higher oil-product demand from Japan, as more than one quarter of the country's refining capacity isn't working.

—Ángel González

Finance

Global banks are likely to suffer losses on loans backed by devastated Japanese properties, and the stock-market selloffs and exchange-rate volatility that followed the disaster could hurt their trading results. But they also stand to profit from a rebuilding effort sure to require lots of credit.

Willem Buiter, chief economist at Citigroup Inc., which has 5,000 employees in the country, the largest presence of any U.S. bank, predicts "a massive reconstruction boom in real estate and infrastructure."

Insurance companies will help refinance that effort by picking up an estimated 10% to 20% of a property-damage tab that could top $200 billion, but their rates could rise as the disaster hammers home the importance of property coverage.

The industry's total liability for residential earthquake damage is capped at $7 billion; a government pool absorbs other losses.

No such backstop exists for commercial-property damage, and the cost of business interruption is another wild card, according to Moody's Investors Service. Most U.S. manufacturers, for example, have some form of business-interruption coverage, which could leave insurers on the hook for supply-chain disruptions caused by the quake.

Insurer American International Group and reinsurer Swiss Re have put their losses from the disaster at $700 million and $1.2 billion, respectively. Moody's says global reinsurers, such as Lloyd's of London, which help insurance firms limit their risks, will absorb a "meaningful portion of losses."

Shares of Japan's three largest property-casualty insurers, Tokio Marine Holdings Inc. and the parents of Mitsui Sumitomo Insurance and Sompo Japan Insurance all fell by 20% or more from their February peaks in the first 10 days after the disaster. The stocks have rebounded slightly in the past few days amid reports of progress in cooling the crippled Japanese nuclear plant.

Three U.S. life insurers with significant Japanese exposure—Aflac Inc., Prudential Financial Inc. and MetLife Inc.—face "moderate" losses from the disaster's thousands of fatalities, according to Moody's. They may also face a loss of premium income if policy holders in the affected area find other bills more pressing.

—Randall Smith

Travel

U.S. airline executives expect the recent slowdown in Japanese travel will be temporary, with demand picking up later this year as the nation's rebuilding efforts take off.

But hotels operated by global chains in the Pacific region could suffer from fewer Japanese tourists traveling overseas.

Delta Air Lines Inc., the largest U.S.-based carrier in Japan, estimates temporary pullback on daily flights to Tokyo's Haneda Airport and elsewhere in the country will lop $250 million to $400 million from 2011 earnings, Delta President Ed Bastian said Tuesday at an investor conference.

United Continental Holdings Inc. and AMR Corp.'s American Airlines have yet to suspend flights to Japan. "Of course, no one knows what the future holds," said AMR Treasurer Beverly Goulet on Tuesday. AMR still plans next week to launch a joint venture with Japan Airlines Corp.

Delta and carriers in Singapore, Australia, China and South Korea have said they are paring back Japan flights. Delta aims to reduce capacity there by 15% to 20% through May.

Hotels near the hardest-hit areas in northern Japan have closed because of problems with logistics or infrastructure. Several hotel chain companies, such as Four Seasons Hotels and Resorts, Hilton Worldwide and Starwood Hotels and Resorts, report occupancy is far lower than normal in Tokyo, but higher than normal in some other parts of Japan.

Some hotels, such as the Radisson near the Narita Airport, are not taking new bookings through the end of this month (March) due to the uncertainty in fuel, food and other resources.

Hotel executives said it's too soon to tell the longer-lasting impacts. "The strong likelihood is there will be a reduction in outbound travel," said Simon Barlow, president of Carlson Hotels Asia Pacific, which owns the Radisson brand.

Outbound travel from Japan could sink by 10% this year, in line with the declines observed after the Kobe earthquake in 1995, according to a recent report from Tourism Economics, a consulting firm. Arrivals from Japan to Hawaii since the quake are down 25% over the same time last year, but it is unclear how long that pattern will continue.

—Timothy W. Martin and Alexandra Berzon

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