

Innovation no longer falls to the little guy

BY STEVE LOHR

For more than a decade, the prevailing view of innovation has been that little guys had the edge. Innovation bubbled up from the bottom, from upstarts and insurgents. Big companies didn't innovate, and government got in the way. In the dominant innovation narrative, venture-backed start-up companies were cast as the nimble winners and large corporations as the sluggish losers.

There was a rich vein of business-school research supporting the notion that innovation comes most naturally from small-scale outsiders. That was the headline point that a generation of business people, venture investors and policy makers took away from Clayton M. Christensen's 1997 classic, "The Innovator's Dilemma," which examined the process of disruptive change.

But a shift in thinking is under way, driven by altered circumstances.

In the United States and abroad, the biggest economic and social challenges

Progress will depend on collaboration across a wide range of disciplines, which big companies can foster.

— and potential business opportunities — are problems in multifaceted fields like the environment, energy and health care that rely on complex systems.

Solutions won't come from the next new gadget or clever software, though such innovations will help. Instead, they must plug into a larger network of change shaped by economics, regulation and policy.

Progress, experts say, will depend on people in a wide range of disciplines, and collaboration across the public and private sectors.

"These days, more than ever, size matters in the innovation game," said John Kao, a former professor at the Harvard business school and an innovation consultant to governments and corporations.

In its economic recovery package, the administration of President Barack Obama is financing programs to generate innovation with technology in health care and energy. The government will spend billions to accelerate the adoption of electronic patient records to help improve care and curb costs and billions more for so-called smart grids that use sensors and computerized meters to reduce electricity consumption.

In other developed nations, where energy costs are higher than in the United States, government and corporate projects to cut fuel use and reduce carbon emissions are further along. But the Obama administration is pushing more in that direction. The change will bolster demand for more efficient and more environmentally friendly systems for managing commuter traffic, food distribution, electric grids and waterways.

Those systems are animated by inexpensive sensors and ever-increasing computing power but also require skills to analyze, model and optimize complex networks, factoring in things like weather patterns and human behavior.

Big companies like General Electric and International Business Machines that employ scientists in many disciplines typically have the skills and scale to tackle such projects. Their advantage is in "being able to integrate innovations across these complex systems," said James E. Spohrer, a scientist at I.B.M.'s Almaden Research Center in San Jose, California.

The lone inventor will never be extinct, but W. Brian Arthur, an economist at the Palo Alto Research Center, says that as digital technology evolves, step-by-step innovations are less important than linking all the sensors, software and data centers in systems.

Today, Mr. Arthur said, the unfolding "digitization of the economy" is in some ways a modern rerun of past technology waves, from steam power to electricity. "It's not individual inventions that matter so much, but when large bodies of technology come together and have an impact across the economy," he said. "That's what we're seeing now."

In computing, some technological frontiers require size and deep pockets. To be competitive in Internet search and some other Web services, which cater to hundreds of millions of users worldwide, a company must build data centers of gargantuan size, and only a handful of companies can design and afford them, led by Google and Microsoft.

In health care, institutions that have done best in improving the health of patients with chronic conditions like heart disease and diabetes have been larger, integrated systems like Kaiser Permanente in California and the Geisinger Health System in Pennsylvania. They have the scale and incentives to invest in things like wellness programs and electronic health records.

In an e-mail message last week, Mr. Christensen, a professor at Harvard Business School, said that big companies do tend to resist disruptive innovation but that size need not spell failure. "The good news is that, once they recognize the benefits of disruptive thinking," he wrote, "the big companies have all the resources necessary to induce change."

For Latvia, painful cuts to keep a bailout deal

RIGA, LATVIA

BY CARTER DOUGHERTY

Many countries in the world have felt the sting of the economic crisis, but few can match Latvia for sheer pain. A harrowing contraction in the economy is reordering expectations for the future as the country's leaders grapple with a credit-fueled boom turned to bust.

Two brothers, Matiss and Oskars Barkoviskis, see it every day as they make their rounds here in their borrowed Mazda pickup truck. In the three months since they founded a charity for feeding the poor, they have discovered a strong and growing demand for their services.

In just that time, the number of families they visit each week has nearly doubled, with new ones answering ads in Riga's free newspaper every day. They started by delivering groceries down the dirt roads outside Riga and into decrepit, Soviet-era high-rise apartment buildings. But now they find themselves helping out families who live in apparently comfortable surroundings, but who can no longer afford to feed themselves.

"Before we started this project, I never thought people could live like this," said Matiss Barkoviskis, 20. "There is a sadness that I did not expect."

It is not hard to grasp what stands behind the sour mood in Latvia.

Forced into the arms of the International Monetary Fund, the Latvian government is now cutting its budget and the wages of state employees in a bid to rebalance a society that had run badly out of whack.

Austerity is rippling down the social hierarchy, as the affluent cancel vacations, middle-class people fret about social descent, and Dickensian scenes of destitution multiply.

In Riga, the capital, abandoned construction sites, vast lots of repossessed cars and a new, utterly empty shopping mall testify to the misery. But the government's tough medicine for the crisis, stiffer than Black Balsam, the syrupy herbal liqueur that is the country's national drink, has defined the times.

Latvia is racing to halve an enormous government budget deficit, now estimated at 12 percent of gross domestic product, even as its economy is expected to contract by 16.5 percent this year. That is a condition of the \$10 billion bailout by the I.M.F. that the European Union, of which Latvia is a member, also



Oskars Barkoviskis getting a signature after delivering food to the needy. The number of families his charity helps has nearly doubled.

supported.

Prime Minister Valdis Dombrovskis, acutely aware that the previous government fell after Riga was shaken by riots in January, must now convince wary lawmakers that the country's choices have narrowed to bad and worse.

"There is a growing awareness of what the problems are, but also what the alternatives are," Mr. Dombrovskis said in an interview. "The alternative is not receiving international financing."

The alternative, in other words, is default. In better times, the global financial system would barely flinch at the idea of Latvian insolvency. But the other Baltic countries, Estonia and Lithuania, as well as Romania and Bulgaria and even Western stalwarts like Ireland all gorged on cheap credit and are all groaning under a heavy debt load. The last thing they want to see is a default,

which could reignite a crisis that appears to be easing.

"Latvia is a reminder that there are other countries struggling with huge imbalances, though nobody has turned out as bad as Latvia," said Lars Christensen, chief analyst at Danske

Latvia is racing to halve an enormous budget deficit.

Bank in Copenhagen, who has long warned of a convulsion in the region. "Some come pretty close."

In the heady days after it gained membership in the European Union in 2004, Latvia pegged its currency, the lat, to the euro in anticipation of eventually adopting the European currency. Its economy blossomed and Riga, blessed with its abundance of stunning Art Nouveau architecture, emerged as a kind of

capital of the Baltics.

Euro-denominated lending exploded, to the point where 85 percent of household debt was held in euros. But that seemed immaterial at the time, since the euro would soon replace the lat as the country's currency, or so it was thought.

The lat is still with Latvia, however, and so is a colossal problem of how to devalue the currency — the usual adjustment mechanism in a financial crisis — without creating a crushing debt burden. Rather than let the currency decline, the government has chosen what it calls an "internal devaluation," in which wages are forced downward to restore the economy's equilibrium.

In December, the previous government reduced wages by at least 15 percent for most civil servants, and Mr. Dombrovskis is promising more. The government's procurement budget was

cut by a quarter, while the value-added tax increased to 21 percent from 18 percent.

Exceptions for books and hotels fell away; excise duties on alcohol and gasoline rose.

The experience is weakening the bonds that Latvians feel for their state. Though proud of their heritage in language and culture, many now speak openly of emigration, and fading memories of citizens standing together with leaders to throw off Soviet domination 19 years ago only accentuate the alienation.

"Independence or bondage is an easy question to answer," said Krisjanis Karins, a former Latvian economy minister. "This time it is not so cut and dried."

Girts, a lanky 40-year-old doctor's assistant, works three jobs in three hospitals for a monthly salary of \$1,350 and spends half his income servicing a euro-denominated mortgage on his apartment.

The mood at Latvia's state-run hospitals, he said, is now one of foreboding, as employees gripe that managers did not share in the pain of a 20 percent wage cut in January — one that covered all government workers — and will dodge another later this year. "I have very little faith left in the Latvian state," said Girts, who asked that his surname be withheld for fear of retribution by supervisors. "I don't know how much longer this can go on."

For Latvia's poor, the mood falls somewhere between bewilderment and frustration, as families struggle to comprehend why their world has come apart.

It did not make them rich, but Latvia's boom over the past few years reached Aija Voitov and her husband, Juris, who live in a two-room shack heated by a crude metal stove down a dirt road outside Riga.

Though Mr. Voitov switched jobs from time to time, work was plentiful, and Mrs. Voitov had only to walk over to the nearby main road to find work at a big supermarket. Three months ago, Mr. Voitov lost his job at a food processing factory where he had earned \$735 a month, a tiny enough sum. Since then, as the family scrapes by on state assistance, Mrs. Voitov confesses little comprehension of exactly what went wrong, only that in the past, things were better.

"It was normal, it was good," Mrs. Voitov said. "There was plenty of work."

Web start-ups pursue new funding models

SAN FRANCISCO

As advertising dries up, investors say companies need alternative sources

BY CLAIRE CAIN MILLER

For anyone with a crazy idea for a Web business, the way to make it pay was once obvious: get a lot of visitors and sell ads. Since 2004, venture investors have put \$5.1 billion into 828 Web start-up companies, and most of them are supported by ads, according to the National Venture Capital Association.

Now advertisers have cut back their online spending. So Web start-ups are searching for new ways to make money, like selling real, or virtual, goods or asking customers to buy subscriptions.

And venture capitalists who envision a sale of the company in the public markets are encouraging these efforts. Roger Lee, a partner at Battery Ventures who invests in digital media start-ups, said he considers only companies with one or two revenue streams in addition to advertising.

"Current troubles in the advertising economy are forcing people, out of necessity, to ask really hard questions about how do I build a profitable business," he said.

The latest example is OpenTable, a restaurant reservation site that makes money selling its software to restaurants and charging them \$1 for each diner seated. Last week it became the first venture-backed Web company to go public in two years. It was a very successful offering. The stock was offered at \$20 on Thursday, 43 percent higher than investment bankers' original price estimates. It closed Friday at \$28.71, a 44 percent gain.

Others are learning the lesson. When Ben Elowitz designed Wetpaint in 2005, it was intended to let anyone create a Web site free. The venture capitalists he talked to said Wetpaint should get as many visitors to the sites as possible so it could offer advertisers a big audience.

Typical Wetpaint Web sites were attracting audiences of a few hundred thousand last fall, when many of their advertisers raised their sights to publishers with more than five million readers, Mr. Elowitz said. Rates for leftover ad space fell to 25 cents per thousand views from \$1.

Some tense board meetings followed. "Toward the end of the year, we came around to say, 'We're not going to depend on one revenue line,'" he said. "The online advertising market looked like it would be the biggest star on the landscape, and even that star has dimmed."

Now, Wetpaint charges its big company customers, like HBO and Fox, a fee in exchange for providing extra services like site promotion and moderating reader forums. Smaller customers can pay to keep their sites free of ads. Wetpaint plans to add more paid services, including additional storage for big files and personalized domain names.

The market consultants at eMarketer say that while ad growth online has slowed from its 20 percent to 30 percent growth rates, it still grew 10.6 percent last year and is expected to expand 4.5 percent this year. And while advertisers are expected to spend less on display, classified and e-mail ads, they will spend more on search and video ads.

Some technology investors say there is no reason to panic.

"Pre-October, most business plans were ad-based models, and all of a sudden, the entire world decided they were virtual goods or subscription models, and I just find those overreactions crazy," said David Sze, a partner at Greylock Partners who has invested in ad-supported sites like Facebook and Digg. "Sure, the ad industry will shrink, but I believe you will see continued growth in ad dollars going to the Internet over time."

New companies, however, can find it hard to attract tens of millions of visitors, as Facebook and Digg have. And without them, the advertisers may not follow.

Pandora, an online radio site, tried subscriptions when it started in 2005.

"That lasted all of three weeks," said Tim Westergren, Pandora's founder. "It was pretty clear there was no future in that and the only real option was to go free." Pandora now has 10 million listeners a month and advertisers like Hewlett-Packard and Best Buy.

Ads are not enough, though. Last week, Pandora began an optional subscription service. For \$3 a month, listeners see no ads and receive a desktop application and faster streaming.

"This is the ultimate debate: What is the nexus of what users want and what the economics will allow?" Mr. Westergren said.

Pandora's new model, which is often called "freemium" — a mix of free and premium — is becoming the most popular among Web start-ups.

Xobni, which makes a tool that simplifies searching in Outlook e-mail, is free but plans to unveil premium, paid versions this summer that offer more features. Xobni does not run ads.

"Ads are an inefficient business model, making indirect revenue as a result of behavior and advertising to people who don't want to see them or for whom they're irrelevant," said Jeff Bonforte, Xobni's chief executive. "Premium is a very direct and efficient model."

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