

The Wall Street Journal Millennium (A Special Report):
Industry & Economics

So Long , Supply and Demand:

There's a new economy out there -- and it looks nothing like the old one

By Thomas Petzinger Jr.

01/03/2000

The Wall Street Journal

Page S1

(Copyright (c) 2000, Dow Jones & Company, Inc.)

All this talk of a "new economy" bothers some people. "Pure hype," they say. "Nobody has repealed the laws of supply and demand."

Don't tell that to America Online. It became one of history's fastest-growing companies by giving away as much product as possible. In fact, the more it gave away, the greater the demand for more.

"Customers still buy, and vendors still sell," the skeptical say. "Pure and simple." But who is the vendor when Delta operates a TWA commuter flight bearing a United flight number? And who is the customer when you're flying free of charge on mileage that United provided to your long-distance carrier?

"Monetary policy is as important as ever," you say. "Maybe more so." So, how many "help wanted" ads disappeared the last time the Fed increased interest rates to "cool" the national economy? And what is the national economy, anyway? Does it include all those software engineers in India and Germany working for Lucent Technologies?

Choosing Sides

The economy is changing. That's obvious enough. But whether the sum of the changes equals a new economy is a hotly debated issue -- and among the most profound questions facing economic man as he strides into the new millennium. No entrepreneur, in developing business models, can ignore the new-economy question. Students pondering their career paths must decide whether to embrace or escape from the economy in which their parents work. Consciously or not, investors choose sides in the debate every time they value a stock for more than today's accounting tools can express.

To a lot of people absorbed in day-to-day business, the answer is so obvious it hardly needs stating. "Conventional economics is dead. Deal with it!" cries Mark McElroy, a principal in International Business Machines Corp.'s Global Knowledge Management Practice in Cambridge, Mass. In helping clients speed innovation, he favors "nonlinear" tools that "defy conventional economics."

Yet the economics profession refuses to certify the arrival of a new economy. Even Paul Romer of Stanford, widely recognized for his theories about the relentlessness of growth,

dismisses the new-economy debate as much ado about nothing. "Visionaries will exaggerate and overstate; professional economists will dismiss and disdain." And in the end, he says, "the economy of the next century will not be dramatically different from the economy of this century."

You can understand why economists throw cold water on the new-economy concept, since accepting it would require them to abandon many of their dearest tools and techniques. It has become cliched to cite the historian Thomas Kuhn's 40-year-old concept of a "paradigm shift" -- a revolution in knowledge that forces scientists to give up the beliefs on which they have staked their careers. But that's exactly what economics and accountants could be facing. As Prof. Kuhn noted, "The emergence of new theories is generally preceded by a period of pronounced professional insecurity."

Stealth Wealth

Economists are constrained not only by their models but also by their data. Official government statistics don't come close to capturing the surging significance of small and midsize businesses, for instance. "I call it 'the invisible economy,' yet it is the economy," says David Birch of Cognetics Inc., Cambridge, Mass., which closely tracks business formation. The statistics used by economists also fail to capture the productivity-enhancing effects of digital technology, particularly as it revolutionizes supply chains.

"They're trying to fly an airplane by reading the gas gauge," says Timothy Askew, president of U.S. Aluminate, a Baltimore-based producer of specialty chemicals. His company gives away extremely costly services and supplies in order to lock in sales contracts of greater long-term value. It also uses electronic links to deliver products on an as-needed basis. "No national statistic could possibly measure that," Mr. Askew says.

At the same time, the prominence of technology in today's economic expansion blinds many observers to deep changes in the culture, structure and distribution of firms: the surge in outsourcing, the spread of "co-opetition," and the devolution of economic decision making across a much larger and more diverse population of businesspeople. The new economy "is actually much broader than technology alone," says Danny Hillis, vice president of research and development at Walt Disney Co. "It is a new way of thinking."

Nobody's saying the old economy is dead or irrelevant. The industrial economy will persist as far into the third millennium as anyone can see, just as the agricultural economy persisted through the Industrial Age and remains vital today. But there's little doubt that much of today's economic dogma will account for an ever-shrinking proportion of economic activity.

Nor is anyone saying today's good times will last forever. The business cycle -- a creation of the Industrial Age -- may well become an anachronism. But there were bubbles, panics and crashes long before recessions and recoveries became cyclical.

So, then, is it fair to hail the arrival of a new economy? Yes, assuming we can answer in the affirmative questions in three essential areas: the sources of wealth, the fundamentals of pricing and distribution, and the structure of economic decision making.

1. Have the most important sources of wealth changed?

A few first principles: An economy is the sum of every action people take to provide more with less. That has always been the source of wealth and always will be. When tools, relationships and decisions create value, people tend to repeat their use. These patterns interact, displaying law-like behavior. Identifying those laws aids in planning and predicting, which is why we have economists.

In one way or another, wealth-creating innovations ultimately substitute knowledge for energy or materials. That, too, was as true in Paleolithic times as it will be in the year 3000. Federal Reserve Chairman Alan Greenspan once noted that through the second half of the 20th century, the U.S. tripled the real value of its output with no increase in the weight of the materials produced. It did so by replacing alloys for basic metals, diesel fuel for coal, telecommuting for hours in traffic -- in all such cases, the substitution of knowledge for mass and effort.

Compounding Innovations

Knowledge accumulates exponentially, with every innovation creating the opportunity for a greater number of innovations. It was once projected that the Human Genome Project would take at least 40 years; in the end it will take a fraction of that time. Not long ago some authorities deemed the Y2K bug nearly a trillion-dollar problem, but each new fix opened the door to still more fixes.

On an economywide level, these accelerating improvements may now be entering a supercritical phase in which they compound exponentially. Inventories, which once triggered or prolonged recessions, are not just declining but in many places evaporating. Lag in all forms -- work-in-progress, time to market, "allow four to six weeks for delivery" -- is diminishing drastically.

Tri-City Treat Inc. of Rock Island, Ill., uses Iron Age technology to harden metal parts for auto makers, but manages to give Detroit a price cut practically every year by adroitly scheduling its production processes. A modern lumber mill can calculate which lumber products to slice from a tree based on pricing information available when the saw hits the wood. Federal Express Corp., much like the "packet"-switching Internet, routes packages with such efficiency that physical distances involved are meaningless.

'Atoms to Bits'

Though government statistics fail to detect many such improvements, someone occasionally comes up with some impressive data. Credit Suisse First Boston recently investigated reductions in working capital, property, plant and equipment as a proxy for the substitution of knowledge for physical assets. Though the study involved only the

industrial members of Standard & Poor's 500-stock index -- a very small subset of the economy -- these companies alone were found to have created \$245 billion of wealth in the 1990s by converting "atoms to bits."

"Economists fail to realize that these improvements are reducing costs so radically as to enable entirely new ways of doing business," says telecom consultant David Isenberg of isen.com, Westfield, N.J. That includes intimate new levels of cooperation among firms, made possible by digital communications as well as a new ethos among entrepreneurs. "Customers and suppliers who enter into such relationships tend to hire each other, invest in each other and solve each other's problems," Dr. Isenberg says.

Meanwhile, global markets, which are growing at more than twice the rate of domestic markets, intensify the pressure to cut costs, thereby creating wealth for society at large. (Global markets also widen knowledge exchange, which makes everyone smarter faster.) Arbitrage, once confined to commodities and finance, increasingly applies to international labor markets as well, which explains in part why Lucent turns to India and Consolidated Edison to Ireland for help in software testing. In a transparent marketplace, when everyone knows everyone's price, the price of everything trends downward.

Consider the magnitude of all this: Instead of causing prices to rise, economic growth is actually propelling them lower.

No Capital Needed

Here is the best part: Unlike new steel mills, say, or new transportation technologies, most digital innovations are incredibly cheap to create and apply. The Web browser, one of the most widely adopted products of the 1990s, was born in an Illinois graduate school. It took zero capital for Jeff Bezos of Amazon.com to dream up the most revolutionary retailing concept since Sears. Many of the most important innovations in cell-phone technology have come from some of the smallest economies in the developed world, in Scandinavia. Even though a pharmaceutical company may spend billions shepherding a new product through the regulatory process, the spark of innovation behind new drugs comes increasingly from college labs and biotech start-ups.

The bottom line: Creativity is overtaking capital as the principal elixir of growth. And creativity, although precious, shares few of the constraints that limit the range and availability of capital and physical goods. "In a knowledge-based economy, there are no constraints to growth," says Michael Mauboussin, CS First Boston's managing director of equity research. "Man alive! That's not something new?"

While creativity is everything today, capital is simply everywhere -- cheap and abundant. Instead of financing technology innovation and development, the venture-capital firms of Silicon Valley have become money factories for marketing campaigns. Going public, once a tool for financing growth, has instead become an exit strategy for investors. These days, the publicity generated by an initial public offering is considered as valuable as the cash proceeds.

This is what capital has come to in the new economy: "The IPO," says Holland Carney of the public-relations firm Alexander Ogilvy, "has become recognized as the ultimate branding event."

2. Have the fundamentals of pricing and distribution changed?

In his classic undergraduate text "Economics," Paul Samuelson noted that any second grader could figure out that increased supplies cause lower value. But that was before Windows 95, automatic teller machines and Nike shoes. Products used in networks -- whether computing, financial or social -- increase in unit value as the supply increases.

One widely cited example is the fax machine. The first was worthless. The second made the first more valuable, and so on. Fads and fashions, another type of network surging in economic significance, work on the same principle: If you have it, then I must also. (Think of body piercing. Think of Beanie Babies.) Former Stanford economist W. Brian Arthur has popularized this more-begets-more concept under the banner of "increasing returns." The timeless notion of diminishing returns isn't dead, of course, but it applies to an ever-shrinking proportion of value-added activity, such as grain harvests and polyvinyl-chloride production.

Increasing returns work hand-in-hand with the substitution of knowledge for physical objects and physical toil. A car, a hairdresser or a hydrocarbon cracker can be consumed or employed by only one user at a time. But knowledge-replete products like music, Web pages and operating systems can be stamped out over and over. After making the first copy, the marginal cost of every other copy is virtually nil, even as its value to the user grows.

This explains why a seemingly insane strategy such as giving away your basic product has become a strategy of choice in the new economy. You can download thousands of software products for nothing, but the vendor collects revenue from another source, such as from selling upgrades, support or advertising. (Radio and television broadcasters -- networks, after all -- have always operated this way.) Another network, the cell-phone system, exploded when telecom companies began providing phones for practically nothing, even free of charge, and reaping increasing returns from air-time charges. (Because the marginal cost of air time is also nearly zero, that too is probably headed for free. The telecom companies will figure out a way to provide value-added service at a price.)

Selling Expertise

Business-school students are putting these principles in action even before leaving school. Five M.B.A. students at Dartmouth's Tuck School of Business have started an Internet radio station to "stream" business programming to anyone for free. The site will call on all the contacts and creativity they can muster, but it will cost almost nothing to build and maintain. One reason is that their software vendor is giving them its product for

free. If the concept takes hold, "Tuck Radio" will use its brand name and expertise to hire out its "netcasting" services to paying clients and perhaps sell advertising on the site.

"I find it incredibly exciting to be part of something that truly represents a fundamental shift in the economics of markets," says co-founder Matthew Pope. In his spare time he also works for moviestocks.com, created by one of his graduate-school classmates to raise funds for independent filmmaking online.

These concepts aren't entirely new. Retailers have always used loss leaders to goad people into buying higher-priced merchandise. Gillette gave away razors to sell blades. Electric utilities have given away light bulbs to sell power. The difference today is that freebies, loss leaders and increasing returns, along with the substitution of knowledge for mass, are becoming the new foundations for growth, within individual firms and the economy at large.

Our 500-year-old system of accounting has grave limitations in this world. A few big companies, notably Skandia Insurance Co. of Stockholm, are trying to invent Information Age accounting tools that reflect knowledge assets and long-term value creation. But for now, according to the CS First Boston atoms-to-bits report, "there is a substantial and growing chasm between our accounting system and economic reality."

Nobody's saying a company can indefinitely consume more than it creates; that would require repealing the laws of physics. But in an economy awash in capital, the endgame, not the score at the end of each quarter, is all that counts. Netscape, for one, never made much money -- but it was worth nearly \$10 billion of real value when purchased by America Online.

"Earnings are a decision variable, not a requirement," says Prof. Arthur, the economist. "If everyone thinks you're doing fine without earnings, why have them?"

3. Has the structure of economic decision making changed?

It seems a miracle. The U.S. has sustained one of the longest expansions in its history despite the Asia meltdown, the peso collapse, the failure of Russia and other harsh blows from the outside. Knowledge-fueled growth and hyperefficiency account for only part of the this robustness. One additional factor is that the economy is smarter than ever.

Because of downsizing and outsourcing, the 1990s witnessed a massive breakup of decision-making authority from a small number of monolithic corporations to an untold number of small firms and individuals. People, departments and divisions that once marched to a single drummer inside a single company became widely scattered across the economy, each making its own decisions on the basis of local information. As a consequence, economic shocks that used to cascade and magnify across the economy are now damped.

"At one time, if you had 50 or 100 giant companies doing the same thing in lockstep at the same time, you could destroy an economy," says Mr. Birch of Cognetics. "But you don't have that anymore."

Better but Narrower

Meanwhile, the variety of niches occupied by new businesses is growing rapidly while the niches themselves are becoming narrower all the time. Research has shown over and over that the more diverse the group, the higher the quality of the decision making.

Though official statistics understate the story, there's no doubt that the economy is splintering into ever-smaller and more specialized pieces. All job growth in the 1990s occurred in companies with fewer than 500 employees, and the vast majority of that occurred in firms with head counts of 20 or less. Start-ups are growing at three times the rate of the national economy. Surveys of households reveal that businesses are forming at roughly three times the rate expressed in tax records.

Mr. Birch is reminded of his years with the space program. When NASA tugged rockets to the launch pad on a smooth, concrete road, they wobbled precariously. But when it resurfaced the road with millions of tiny rocks, the giant crafts rolled firmly upright. "A collection of pebbles," he says, "is a firmer base than a slab of concrete."

Thomas Petzinger Jr., a Wall Street Journal staff reporter in Pittsburgh, served as editor of this millennium edition and is the author of "The New Pioneers: The Men and Women Who are Transforming the Workplace and Marketplace."