

## Supply-side Upside

Attacking the U.S.  
market through  
its alliance with  
EarthLink, SK  
Telecom will bring  
its highly developed  
software platform  
to the U.S.

### Inside:

- Korean invasion
- Chip bias
- Foundries: Fast forward
- Sea of capacity
- Investing in China

Subscribers on my board at [www.gildertech.com](http://www.gildertech.com) are wondering why the markets continue to sleet and slough in the face of good news and good policy, yielding low inflation, low tax rates, low interest rates, record employment, record productivity, record household net worth, record corporate cash and profits, brisk economic growth, and reasonable hopes for more. Measured by profits under the National Income and Products Accounts (NIPA), the earnings yields on stocks remain nearly 70 percent above the yield on ten year bonds.

For their answer to the enigma of torpid markets in a strong economy, my baffled friends need explore no further than the three issue *Barron's* Roundtable of pundits that I have been allowing to pile up on my desk over the last few weeks in order to preserve my good mood, still buoyant from Happy New Year's bubbly and the Iraq elections. In this annual feature, *Barron's* reliably captures the perpetual mystification of demand-side economists in a supply-side world—their rearview trend lines, their cynicism toward enterprise and technology, their simultaneous disdain and deference toward the nincompoop consumer and his sentiments, their delusional belief that foreign investors holding dollars differ significantly from American investors holding dollars, and their near-astrological preoccupation with macroeconomic “gaps,” deficits, and imbalances and strange skepticism toward assets, which are normally regarded as vain or spurious compared to debt. I find it all very trying. But I am your humble servant and on a bleak midwinter evening late last month I slogged through every word. I report here my lugubrious findings: Some people are just hard to please.

"The Fate of the World hangs on the indomitable U.S. consumer," intones the editor, one Lauren Rublin, opening the sessions with the obligatory demand-side mantra and committing the group from the outset to an utterly irrelevant and meaningless point of view. As usual around *Barron's*, this consumer is bogged in debt and bogged with bubbles. And his indomitability, on which this imperiled planet depends, is always deemed neurotic—an attention deficit hyperspending disorder whereby the patient, jangled by spurious fiscal, monetary, and investment letter “stimuli” and reckless daredevil debts, keeps buying stuff with both hands—technology stocks, glazed donuts, long bonds, SUVs, deep fries, On-Command movies for an average of eight minutes, oil, gas, lawyers, Internet bandwidth, stimulated (or simulated) cantilevers of tumescence, way beyond his ways and means. Without new tolls and taxes, and other

torturous therapy, it's all "unsustainable," like Social Security, climate change, California aquifers, energy usage, Donald Trump, youth, market prices, old age, trade imbalances, and budgetary gaps.

Just as last year and the year before that, down all the dim decades of capitalism at *Barron's*, the U.S. personal savings rate is alleged to have dwindled to near zero, the country remains in horrible hock to foreigners who unaccountably fail to sell us out, and the silly consumer continues to blow bubbles and buy stuff. Reading the eminent "voodoo" economist David Malpass of Bear Stearns (never invited to *Barron's*) some of these obese buyers even imagine they are rich. As Malpass explains, they have a net worth of \$54 trillion. U.S. stock market cap has risen in 25 years from around one-third to nearly one-half the global total. But they are now tapped out, and the world is about to tumble down from their shoulders. Hence the perennial *Barron's* message: Watch out below. Here it comes. Holy, Kamoli.

Nonetheless, I have to grant that this year one thing has changed dramatically. After decades dissing my sector as a Ponzi scheme or pump-and-dump amid a fun-house hall of mirrors, the distinguished Saturday publication has at last found a technology expert they like. Stepping out of a phone booth, or perhaps a cave, in Nashua, New Hampshire, just in time, in funereal garb and a gimpy smile, it's "supermaven" Fred Hickey, who edits the prestigious *High Tech Strategist*. Hickey announces: "The secular bear market is going to resume." He foretells 9,000 on the Dow and 1,500 on the Nasdaq and urges readers to sell with both hands, short the whole tech sector, and buy shares of Newmont Mining, a global gold and silver operation.

Since such advice is normally saved by the *GTR* for the possible arrival in the White House of a new administration headed by Michael Moore and Cynthia McKinney, I will disclose Hickey's views as a public service. Piling up the premonitory metaphors, he explains: "The chickens are coming home to roost," presumably in Nashua, and are dying there like canaries in an imperiled mine. "The bubble has burst" but the market has bubbled up anew. As usual, "there are too many chip companies." (If I may interrupt, there are always too many chip companies, a good sign if you ask me, but a mandate for selective investment). Inventories at **Intel** (INTC), **Xilinx** (XLNX), and **Altera** (ALTR) were up 50 percent or so last time he looked. Intel's are \$2 billion (that's mostly gone, and the industry is now at a bearable 10 percent above normal, but let it pass). **Micron's** (MU) inventories, he says, are up 70 percent (but are also going down while revenues surge). All are overloaded with equipment after binging on it over the last two years (after three years of dearth). In the wake of laying off tens of thousands of workers and closing plants, **Solectron** (SLR), the contract manufacturer, is

still going at only 60 percent capacity (but its chief rival **Flextronics** [FLEX], 70 percent larger, gaining share, and on our list, just announced a blowaway record December quarter).

Adjusted for options (and Hickey believes markets are too dumb to see through silly new option accounting rules), **eBay** (EBAY) is running at 120 times earnings. Short that baby: "When the consumer gives in, he will give up eBay." eBay obediently subsided 19 percent in the next week. I told you Hickey is good! He goes on. Most techs teeter on P/Es around 35 to 45. Broadcom's P/E is at 75. (Charlie Burger calculates 27, but Hickey is presumably including those options again, though they have nothing to do with valuation.) **Linear Technology's** (LLTC) at 33 (sounds like a low); **KLA-Tencor** (KLAC) is at 27 (great company at a cyclical dip).

Yet earnings in many cases are declining along with order rates, as cancellations and profit warnings proliferate. PCs are 40 percent of the market and sales are falling "dramatically." Gosh, short **Best Buy** (BBY), too, says our supermaven. (**Dell's** [DELL] 17 percent profit surge must have been on Michael's book sales.) Comprising 20 percent of the chip market, there's "a gigantic cell phone glut" and a "flat panel TV glut." No hope anywhere in the sector. "The industry had a 59 percent increase in capital spending in 2004...That" says Hickey confidentially, "will lead to Tremendous Losses." Wow. When Art Samberg, another *Barron's* guru, timidly touted a gore-porn electronic game company called **Take-Two** (TTWO) with a safely low P/E and suitably low-tech sleaze appeal, Hickey would have none of it: "People get bored with gore; that's why the P/E is low." Samberg was left with Berkshire Hathaway, which he calculates, at some ingenious length, to be cheap.

But these guys are mere American bears. In this global economy, *Barron's* flies in high-end Teutonic grizzlies from remote caves near Hong Kong and Zug. (Zug is in Switzerland). A perennial ursine who thinks trade should balance like your tires or checkbook or airplane's wings, Marc Faber pointed out that measured in Polish Zloty, the U.S. economy contracted by 19 percent last year. (There is more pith in that view, particularly for tech, than most economists grasp. A weak dollar is bad for technology companies, who assemble assets from around the globe, but it is not as bad as the deflated dollar of the late 1990s, which punished all debtors and together with regulations nearly bankrupted all telecom. What we need is a stable dollar, guided, if I may be forgiven more voodoo, by the prices of gold and commodities.) In any case, trumping cohort Felix Zulauf of Zug, who wants to short the Nasdaq QQQQ, Faber wants to short the whole country.

This year "I'm afraid everything will drop," Faber says with his usual Newtonian relish. Though the dollar may pick up a bit as a result of a hallucinogenic wisp of

hope among pathetic American followers of the Alan Greenspan cult, "in the long run it's a doomed currency." In a telling trope, he prophesied: "The world will end up with its call centers in Europe and the U.S., and its research and development in China and India." He's got a point, if our universities continue to teach Marxism and queer studies while Chinese and Indian schools teach engineering, and if we cling to secondary schools that focus on assuring that no student is left behind in tests of prowess putting a condom on a banana. Our educational system *is* unsustainable, but that means we need to give immigrants green cards with their advanced science degrees rather than tickets back to Asia. But Faber has a further more disturbing point. "Each time capital spending and industrial production moves to Asia...along with them go knowledge and technology [which] boosts incomes in Asia, to the detriment of the U.S...." It's hard to imagine, all these centuries after the revelation of Adam Smith, but these guys still believe economics is a zero-sum game: the successes of some must come at the expense of others. Zero-sum thinking—the idea that the good fortune of others is bad for you—is the single greatest economic evil and cause of political evil everywhere around the world. As long as people can be led to believe this big lie, war is inevitable.

So it goes around the Arthurian orb, as they set out to find undulating grails of opportunity in shorts and sugar, corn and Insured Municipal Term Trusts, hospital companies in Bangkok and Thai Reinsurance firms. "All you need," observes Faber, a week or so after the tsunami, "is a little bad weather and crop prices could be much much higher." Where does *Barron's* find these guys anyway? They are good!

Back on theme, Hickey bemoans a collapse of demand. The deficit is going to drop to \$315 billion next year, according to John Neff, a more upside panelist along with Abby Cohen of Goldman Sachs. But Hickey says a smaller deficit removes a precious demand-side stimulus. Tax rebates work miracles, reelected Bush. Long-term tax rate reductions deplete the budget. No one anywhere around the roundtables at *Barron's* has ever heard of the Laffer curve. To most of these guys the whole economy subsists on government spending, government tax rebates, government debt, private sector bubbles, and the gullibility of befuddled central bankers.

## Korean invasion

The only hope in the Telecosm, according to Hickey in a balky concession, is **Samsung** in Korea ("If somebody put a gun to my head and asked 'what kind of tech stock would you buy?' Samsung is one I might buy.") Samberg also chose Samsung. I guess we are supposed to forget that glut of cell phones and flat panel TVs and the "tremendous losses" portended by world-leading investments in semiconductor capital equipment. I'll go along

with forgetting those. Samsung is a Telecosm stock and the *Barron's* Roundtable endorses it. Sadly, few of you have been able to buy this company that has been on our list for two years but is not listed on American exchanges, except in the partial form of the Korea Fund.

Here come the Koreans. **SK Telecom** (SKM) is joining Samsung as a global champion. The SKT alliance with **EarthLink** (ELNK) for satellite services to mobile phones in the U.S. illustrates the vulnerability that this country is incurring through its 50-state regulatory paralysis and hostility to a coherent broadband system of wireless, fiber-DSL, and broadcast satellite services. Instead we are trying to deploy a patchwork of profitless narrowband systems, cable TV hybrids, Wi-Fi fiddleware, and public sector fiberdoodles, while micromanaging the Bell Operating Companies. Yet it is the Bell companies who actually have the money to deploy a full multimedia system and have no stake in the current U.S. broadband infrastructure widely stultified by TV.

The venture from EarthLink-SK Telecom-WiBro (Korean WiMAX in the 2.3 GHz band with heterodox 9 MHz channels) enables South Koreans to exploit their huge lead in wireless and wireline broadband services, compete with **Qualcomm** (QCOM) as a supplier of intellectual property, and challenge American wireless carriers in the U.S. As recently as 2003, Qualcomm got 43 percent of its royalty income from Korea, 15 percent from Japan, and 75 percent from overseas. Qualcomm royalties are an index of the deployment of state of the art technology. While the U.S. still harvests over half of global telecom revenues (\$780B out of \$1.4T), U.S. regulators are pushing the leading edge massively overseas.

The U.S. therefore represents a greater vulnerability for Qualcomm than does Korea or Japan since the U.S. has a less fully deployed and developed broadband wireless EvDO CDMA system, less fully developed content for wireless, and less penetration by Qualcomm's software system BREW. Attacking in the U.S. market through its alliance with EarthLink, SKT will bring its highly developed software platform to the U.S. (the chief BREW rival) and its prowess in satellite. SKT has already launched satellite services in Korea. Now SKT offers competition for BREW and mounts a challenge to U.S. leadership in broadband content and wireless services. SKT and **KDDI** in Japan already earn nearly twice as much ARPU (average revenue per user) as **Verizon** (VZ) and **Sprint** (FON) in the U.S.

Although *Barron's* has long regarded Qualcomm as an extremely dubious proposition, intriguing chiefly as a short, its Roundtable reminded us helpfully of **Leap Wireless** (LEAP.OB), a Qualcomm spinout and former *GTR* favorite that we had frankly forgotten. Leap had over-leveraged to buy spectrum during the deflation and slipped from our list and our minds into the Styx with Globalstar and GX. But Meryl Witmer of Eagle Capital

# TELECOMSM TECHNOLOGIES

<b>Advanced Micro Devices</b>	<b>(AMD)</b>
<b>Agilent</b>	<b>(A)</b>
<b>Altera</b>	<b>(ALTR)</b>
<b>Analog Devices</b>	<b>(ADI)</b>
<b>Broadcom</b>	<b>(BRCM)</b>
<b>Broadwing</b>	<b>(BWNG)</b>
<b>Cepheid</b>	<b>(CPHD)</b>
<b>Equinix</b>	<b>(EQIX)</b>
<b>Essex</b>	<b>(KEYW)</b>
<b>EZchip</b>	<b>(LNOP)</b>
<b>Flextronics</b>	<b>(FLEX)</b>
<b>Intel</b>	<b>(INTC)</b>
<b>JDS Uniphase</b>	<b>(JDSU)</b>
<b>Microvision</b>	<b>(MVIS)</b>
<b>National Semiconductor</b>	<b>(NSM)</b>
<b>NetLogic</b>	<b>(NETL)</b>
<b>Power-One</b>	<b>(PWER)</b>
<b>Qualcomm</b>	<b>(QCOM)</b>
<b>Semiconductor Manufacturing International</b>	<b>(SMI)</b>
<b>SK Telecom</b>	<b>(SKM)</b>
<b>Sprint</b>	<b>(FON)</b>
<b>Synaptics</b>	<b>(SYNA)</b>
<b>Taiwan Semiconductor</b>	<b>(TSM)</b>
<b>Terayon</b>	<b>(TERN)</b>
<b>Texas Instruments</b>	<b>(TXN)</b>
<b>Wind River Systems</b>	<b>(WIND)</b>
<b>Xilinx</b>	<b>(XLNX)</b>
<b>Zoran</b>	<b>(ZRAN)</b>

**Note:** The Telecomsm Technologies list featured in the Gilder Technology Report is not a model portfolio. It is a list of technologies that lead in their respective application. Companies appear on this list based on technical leadership, without consideration of current share price or investment timing. The presence of a company on the list is not a recommendation to buy shares at the current price. George Gilder and Gilder Technology Report staff may hold positions in some or all of the stocks listed.

## Broadcom (BRCM)

PARADIGM PLAY: LEADING FABLESS BROADBAND DESIGNS

FEBRUARY 10: 31.71; 52-WEEK RANGE: 25.25 – 47.05; MARKET CAP: 10.44B

Well, Broadcom finally took a hit in the downturn as 4Q revenue slid 17% to \$539m from its 3Q peak of \$647m; EPS likewise fell to \$0.23 from \$0.36. Sales slipped across the board: networking by 20% to \$237m, broadband by 19% to \$172m, and wireless by 5% to \$129m. Satellite sank a whopping \$40m. (Echostar apparently stuffed inventories in June when it was a 10% customer at \$66m.) Also down were WLAN and handset chips. On a bright note, bluetooth grew with its continued adoption in cell phones, PC peripherals, and other consumer electronics.

Operating expenses jumped to 33.1% of sales from 27.4% in September, due mostly to the top-line tumble, though R&D has been creeping up steadily through 2004 from \$118 to \$127. Otherwise, the ship is holding steady through the storm, with gross margin hanging tough at 50.6%, inventory actually declining sequentially from 51 days to 44 days to reach its lowest point of the year, and net cash piling up to \$890m from \$307m a year ago, reflecting a healthy free cash flow that soared to \$377m from breakeven in 2003 and a loss of \$140m in 2002. No wonder share price has tripled since the second half of 2002, even after its sharp slide from \$47 last June. At a forward PE (through March) of 27 and in the face of a forecasted flat 1Q, it might pay to be patient for long-term buying opportunities; networking promises softness in March due to continued inventory correction at OEMs, server chipsets are facing rough waters, and revenue reversals have a way of repeating, even in the best firms.

But with Bluetooth, VoIP, digital TV, GigE, WLAN, and peripherals proliferating while Broadcom is innovating, expect upside surges going forward, similar to the 2002–04 run. For example, contesting with Marvell to capture the big-bang universe of Ethernet switches, Broadcom recently announced a new custom ASIC GigE switch processor for LANs, extending its lead in functionality and security over its rival. —CB

## JDS Uniphase (JDSU)

PARADIGM PLAY: COMPONENTS GALORE FOR THE FIBERSPHERE

FEBRUARY 10: 1.88; 52-WEEK RANGE: 1.969 – 5.24; MARKET CAP: 2.71B

Ah, life at the crossroads, navigating Times Square blindfolded. Could this be JDSU, or perhaps Ringling Brothers? CEO Kevin Kennedy sees himself at the intersection of multiple transitions. Saith Kennedy (translated): Markets fluxeth (surprise?), product strategy fluxeth, restructuring fluxeth, and thus JDSU flummoxeth. This quarter we blame the dratted display industry, chastise a confused tier-1 electronics company, swallow the sales shift from higher margin consumer electronics to lower margin

communications (that lost \$14.5m), and lambaste litigious lawyers. With the world so confused, there's no shame in sales down 7% sequentially to \$180.5m accompanied by a gross margin retreat to 17% from the low 20s average over the past 18 months along with a 12% sequential rise in operating expenses. (Well, at least something rose.) And aren't you pleased that, with lingering legal expenses and continuing consumer weakness, revenues should reach \$160m in March, a full 89% of December sales? Meanwhile, JDSU's real business, cost cutting and restructuring, will continue apace for the fifth year in a row while CFO Ron Foster mans the crow's nest searching for Treasure Island—FTTx revenues.

As JDSU continues to be buffeted and pummeled ... buffeted and pummelled ... spun and spewed from one end of the intersection to the other—and back again—we must contemplate the value of a daredevil circus act that never quite makes a profit. Is it worth a forward enterprise-value-to-sales multiple (through March) of 3.33? Currently, investors in rival Avanex are paying for less than two years worth of sales. True, JDSU is much further from a liquidity crisis, giving it more time to waste more money. But two years of revenues is not an unreasonably low price to pay for a flummoxing firm, and for JDSU that means a share price of \$1.62. —CB

## Power-One (PWER)

PARADIGM PLAY: DIGITAL POWER MANAGEMENT CHIPS

FEBRUARY 10: 6.63; 52-WEEK RANGE: 6.00 – 13.71; MARKET CAP: 556.52M

A somewhat rocky December quarter presents a buying opportunity for investors interested in Power-One's innovative new line of Z-One powerchips, not mostly in the company's existing products. Sales were \$4m higher than expected, but unforeseen costs more than offset the gain. The company announced actions to rein in the offending Telecom Systems division, consolidating it within the Embedded Systems division and moving it from "high cost Norway," where a professional engineer costs \$100,000 a year, to "low cost Slovakia," with an average engineer cost of \$12,000. The company says a charge of \$25m this quarter will be worth cost savings \$25m annually going forward. Profitability should happen at \$68m in quarterly revenue, which the company expects in 3Q05.

PWER says it has 10 design wins in the telecom, server, and storage markets for the Z-One platform, which digitizes and radically simplifies circuit-board-level power management. CEO Steve Goldman says reaction from customers to Z-One has been "phenomenal." Korea's LG is testing Z-One in a number of diverse systems, including CDMA wireless base-stations and Ethernet switches. Further innovations in the Z product line to be announced shortly promise to expand significantly the addressable market.

Cisco, Nokia, Lucent, and Nortel continue to be PWER's largest customers, though Cisco is the only

## MEAD'S ANALOG REVOLUTION

NATIONAL SEMICONDUCTOR (NSM)  
SYNAPTICS (SYNA)  
SONIC INNOVATIONS (SNCI)

FOVEON  
IMPINJ  
AUDIENCE INC.  
DIGITALPERSONA

## COMPANIES TO WATCH

ATHEROS  
ATI TECHNOLOGIES (ATYT)  
BLUEARC  
COX (COX)

ENDWAVE (ENWW)  
LINEAR (LITC)  
LUMERA (LMRA)  
ISILON

LENOVO  
MEMORYLOGIX  
NOVELLUS  
(NVLS)  
POWERWAVE  
(PWAV)

TECHNOLOGY  
SAMSUNG  
SEMITOOL (SMTL)  
SIRF  
SOMA NETWORKS  
STRETCH INC.

SYNOPSIS (SNPS)  
TEKNOVUS  
TENSILICA  
VIA TECHNOLOGIES  
XAN3D

10% customer.

With a price-to-sales multiple of just 2, a short-term move to profitability plus the emerging Z-One digital power management revolution make PWER a great buy-and-hold for the next several years. —BS

## Semiconductor Manufacturing International (SMI)

PARADIGM PLAY: MAINLAND CHINA'S BIGGEST SILICON FAB

FEBRUARY 10: 10.46; 52-WEEK RANGE: 9.34 – 17.50; MARKET CAP: 3.9B

Due to a recent litigation settlement with Taiwan Semiconductor, SMI will pay its island rival some \$29m per year for the next six years, during which time both companies will cross license each other's patent portfolio. Blaming the settlement, SMI has postponed its 4Q call until next month. Management's preview portends a positive report, with revenues up 6.1% sequentially (bucking the industry) to \$292m and explosive full-year growth of 166% to almost \$1b. SMI claims 19 new customers in the quarter, with wafer shipments up 15.2% and utilization remaining strong at 95% of expanding capacity. The Shanghai foundry will spend \$1b this year to further grow both 200 mm and 300 mm capacity while beginning production at the 90-nm process. The stock is not far off its low of \$9.35 reached several weeks ago and significantly down from its March IPO high of \$17.50. However, with free cash flow draining the war chest at greater than \$1b annually and net cash already a negative \$311m, watch out for potential liquidity issues in the short-term. —CB

## SK Telecom (SKM)

PARADIGM PLAY: A GLOBAL SOFTWARE AND SATELLITE LEADER

FEBRUARY 10: 19.90; 52-WEEK RANGE: 19.77 – 20.01; MARKET CAP: 13.31B

Added to the list this month. —GG

## Synaptics (SYNA)

PARADIGM PLAY: ANALOG-DIGITAL INTERFACES FOR HAPTICS

FEBRUARY 10: 22.68; 52-WEEK RANGE: 13.32 – 41.19; MARKET CAP: 579.25M

After SYNA shares more than quadrupled over the last 18 months, we began in January telling readers of the online *GTR* forum ([www.gildertech.com](http://www.gildertech.com)) that we would wait for a pull-back to buy the stock again. On February 4, last Friday, SYNA hit its all time high of \$41.19, and George Gilder told investors, "If you haven't taken any profits on...Synaptics, you should." This week's sudden drop from over \$41 to \$23 vindicates that call, but also presents a new buying opportunity.

Rumor that Synaptics' biggest customer, Apple, would turn to Cypress instead for its notebook touchpads precipitated the fall. Then the drop accelerated with rumors that Apple might in-source the production of, or at least find a second source for, the popular iPod "scroll wheel," which it now buys from Synaptics.

The iPod scroll wheel is largely responsible for Synaptics' recently rocketing revenues, contributing some 35% of SYNA's total sales in the December quarter. Bear Stearns believes that the fifth generation iPod, and other models going forward, will use "an Apple/Cypress solution." But other analysts disagree with Bear's analysis, saying it is unlikely Cypress can match Synaptics' unique technologies used in the iPod. CSFB believes Cypress and Synaptics will share the iPod business to varying degrees on various models.

The potential loss of the two Apple products is at least partially offset by the rapidly growing popularity of SYNA products in at least seven other portable music players and the likely insertion of SYNA's new MobileTouch solution into a number of mobile phone handsets. Although losing the iPod business would be a serious short-term hit, the larger trends in Synaptics' markets are better than ever. Apple, Samsung, Singapore's Creative, and others expect to sell 35 million music players in 2005, up from 25 million in 2004. Even without Apple, SYNA should capture a significant share of that market. But SYNA's major new initiative is in a market twenty times as large: mobile phones, which are expected to reach more than 700 million units worldwide in 2005. Other mobile devices and displays of all shapes, sizes, and functions will continue to proliferate, and we are happy to see Synaptics as a major player in a large, very high growth market rather than a virtual monopoly player in a small, niche market. SYNA's complex integrated modules, intimately combining analog and digital processes, cannot be readily displaced by a new chip design.

Synaptics' market cap topped out at \$1.052b on February 4 and now stands at \$579m. The company has more than \$230m cash and equivalents, and more than \$100 million if you subtract its recent addition of \$125m in long-term debt. If SYNA loses half its Apple business, sales could fall by \$35-40m in the first year to around \$230m, but it will still earn \$1.10 per share or more. At a P/E of 30, it would thus be worth more than \$33, or almost 50 percent higher than today's price. The Apple downside surprise is likely to be offset with upside surprises. —BS

## Taiwan Semiconductor (TSM)

PARADIGM PLAY: WORLD'S LEADING MICROCHIP FOUNDRY

FEBRUARY 10: 8.99; 52-WEEK RANGE: 6.60 – 9.92; MARKET CAP: 41.47B

Last fall, the Taiwan Titan took a trip downtown with most of the rest of the semiconductor industry, as sequential declines in revenue (8.4%), gross margin (46.1% to 42.5%), and operating margin (37.5% to 32.9%) presaged an anticipated further single-digit decline this quarter in sales along with a slight narrowing of gross margin. However, when we refocus from the play-by-play and gaze instead at the game and the season, we find TSM already buying its return ticket on the uptown express. Counter to most

of the industry, the largest pure-play foundry will be boosting spending on plant and equipment this year, up 8% to \$2.6b, in a bid to grab a glob of the 90-nm market and further embrace 300-mm manufacturing efficiencies. For the play-by-play partisans, the corresponding 24% capacity growth presents a problem as utilization drops from 88% last quarter to 78% by March. But as explained in this letter, TSM is aggressively pursuing opportunities to digest capacity in its older processes while building on leading-edge efficiencies and capabilities in a bid to repeat its recent peak cycle coup—revenue for 2004 was 54% higher than the 2000 peak and hugely higher than the 5% peak-to-peak growth of the industry. Still in its early stages, revenue contribution from advanced technology has already swollen to 36%.

With free cash flow of \$2.1b and net cash double that, TSM can easily afford its plan. Though trading at a forward PE (through March) of 15, it might pay to let the play-by-play problem solvers get spooked for one more quarter. —CB

## Texas Instruments (TXN)

PARADIGM PLAY: PIONEER OF NEW PROCESSORS FOR TELEPUTERS

FEBRUARY 10: 24.91; 52-WEEK RANGE: 18.06 – 32.02; MARKET CAP: 43.04B

Laboring to maintain its two-thirds share of the world market for cell phone chips, TI announced last month that Nokia will put its new single-chip digital processor in GSM handsets, beginning most likely with the low- and mid-functional phones popular in fast growing emerging markets such as Russia and Latin America. The processor replaces several chips by digitizing sampling and filtering and by integrating functions such as power management, SRAM, and logic, thereby conserving precious power and reducing the cost of making a cell phone.

Worrying TI is that the emerging third-generation (3G) mobile standards are both based on Qualcomm's patented CDMA technology, and the TI competitor has been announcing customers for its chips using WCDMA, the 3G successor to TI's GSM standard used by 80% of mobile subscribers. In addition, Qualcomm plans to introduce to the CDMA market its own single-chip processor, advertised to include a power amp currently lacking in TI's chip.

TI is hanging tough. At a third of revenues, wireless continues to drive the company, with sales in that segment up 12% sequentially in 4Q and up 40% for the entire year; newly emerging 3G claimed 4% of 2004 revenues. Analog, TI's other driver, carved just under a third of sales, and broadband grew in the quarter. Overall, revenue slipped 3% to 3.2b, but inventories were reduced, free cash flow increased to \$1.8b from just below breakeven in 2001, and net cash increased from \$5b to \$6b during 2004. Based on management outlook, the stock currently trades at a forward PE (through March) of 23. —CB

Partners reported to the Roundtable that Leap is now emerging from bankruptcy with a "good balance sheet," 1.5 million customers, 39 markets, and a unique prepaid local service option called Cricket. "No-surprise-billing is attractive, particularly to lower income people and the parents of teenagers...It a great niche." She projects a double from the current price of 26. Crickets are chirping CDMA in Nashville, but the rest of the communications sector is dormant.

## Chip bias

So, we are contrarian around here. Demand is irrelevant; there is no such thing as a consumer. His buying power is totally dependent on work and production and he is currently at work in record numbers for record hours at record pay and rates of productivity. At present, demand-side economists are concerned with the level of receipts from Social Security taxes. Rates, it is said, will have to be increased to support the retirements of the baby boomers. But the payroll tax does not support Social Security. It is a tax on employment that penalizes job creation, drives workers out of the labor market, and promotes retirement. Ending the payroll tax would strengthen the prospect that baby boomers would get pensions, which after all have to be validated by supplies of real goods and services, food, shelter, and medical care from the private sector, not from actuarial promises or trust funds. The U.S. debts that obsess *Barron's* are significant only in comparison to assets, which are at an all time high. The trade gap is good; it means we have attractive financial markets and are generally growing faster than our trading partners. Semiconductors are cyclical, though with a strong upward bias as chips invade contiguous markets.

The "noggin nine"—the list of companies that dominate *GTR* mindshare at any moment, which I update regularly on my subscriber message board—is chip heavy, with an average P/E that is infinite: **EZchip** (LNOP), **NetLogic** (NETL), **Qualcomm**, **Equinix** (EQIX), **Essex** (KEYW), **Power-One** (PWER), **Altera**, **Agilent** (A) and of course, **Samsung**, if you can get it, with a P/E of 6.5, and why not, **Leap**, if Meryl wants you to, and **SKT**, as a new global player with a battered stock which joins our list this month.

At the Needham Growth Conference, I also became intrigued with **Sigma Designs** (SIGM), an ascendant company serving all the various video platforms, plus new ones in preparation, with adaptable chips that can handle all the MPEG standards including MPEG4. If you do not own any **Broadwing** (BWNG), this is as good a time as any to buy, with an understanding of its perils. The entire political establishment is still entirely stultified by fear of an unregulated future (some price might rise!), and without deregulation, American

telecom suppliers are stranded in a litigious wasteland. I'm afraid few people listened in Washington when I told them last week that the entire regulatory concern with monopoly is nothing short of suicidal in an ever more competitive global telecom economy where U.S. companies are struggling to survive. Monopoly is the effect of innovation. If the regulators suppress the American monopolies, we will indeed get a level playing field, which means entrepreneurial death and a Chinese century.

—George Gilder

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## Foundries: Fast Forward

Imagine a world where only the owner of a printing press could author a book. **Barnes & Noble** (BKS) would be stacked and packed with lined notebooks, Bibles, dictionaries, and standard texts having a sure market and the approval of the printers. Meaning, there would be no Barnes & Noble as we know it, and **Amazon** (AMZN) would be nothing but a dank expanse of hallowed trees never to see the pages of a Green manifesto. Literary creativity would be stifled.

Rewind 30 years and that's where we were in electronics. Only the owners of semiconductor factories—from **Texas Instruments** (TXN) on down—could author a chip design. Predictably, these Gutenberg chips were nearly all standard designs with demonstrated markets, such as memories and microprocessors. The silicon sages in these semiconductor firms, known today as integrated device manufacturers (IDMs), had little idea which special chips were right to design. For million transistor very large scale integrated circuits (VLSI), Intel founder Gordon Moore once famously opined, the only obvious use would be memories.

In this environment, creativity and attendant margins migrated to the board and system level—to companies such as **IBM** (IBM), **Hewlett Packard** (HPQ), and **Digital Equipment**. Seeking self-preservation, the semiconductor industry began disaggregating into foundries (independent wafer "fabs") for manufacturing chips designed by architects in "fabless" firms who understood what systems to put on the chips.

First predicted in the 1970s by Caltech's Carver Mead, originator of the book store analogy and namer of Moore's law, the horizontal breakup of the microchip industry between fabless design teams and independent foundries has been speeding rapidly. Over the past two years, revenues of independent foundries grew almost twice as fast as the total chip market. With fabs doing the manufacturing and fabless teams doing the design, the once dominant integrated device manufacturers such as Intel and TI now must share the

road (and the Semiconductor Industry “roadmap” of new processes) with ascendant fabless companies such as Qualcomm and Broadcom and their manufacturing partners such as **Taiwan Semiconductor Manufacturing** (TSM) and **United Microelectronics** (UMC). As the traffic on the road gets heavier, the market becomes more complex and harder to predict. However, signs of a new turning point are emerging this year.

As chip manufacturers move to the new 300-millimeter (mm) and 90-nanometer (nm) equipment, the industry is consolidating. Overall wafer capacity grew about 11 percent in 2004, while capacity for 300-mm wafers grew 65 percent to about 15 percent of the total, dramatically boosting capacity at the most efficient processes. (More chips can be cut out of larger wafers, resulting in lower average costs.) As fixed costs such as plant, equipment, and process development increase sharply, ever-larger production runs are required before a fab makes a buck. Thus, the increasingly expensive cutting-edge equipment is funneling into a relatively small number of superfabs, owned mostly by integrated device manufacturers such as Intel and Samsung and by several ascendant foundries such as TSMC and **Semiconductor Manufacturing International** (SMIC).

Of the 14 fabs producing 300-mm wafers in 2002, just three were independent foundries. By 2006 there will be 47 in production based on investments already in place, with 20 owned by foundries. Now up to 43 percent of leading-edge capacity, foundries continue to gain share. Taiwan Semiconductor made the list of top-10 semiconductor companies in 2004. Nonetheless, the *net cash* in the coffers of the two largest integrated device manufacturers, Intel and Samsung, exceeds last year’s industry-wide independent *sales* by 23 percent, and the cash in the coffers of the two largest independents, TSM and UMC, surpassed by 54 percent the combined revenues of all their rivals.

## Sea of capacity

The widening capacity and technology gap between the superfabs and smaller independents can only put increasing pressure on marginal players using older, less efficient processes. In the near term, that’s because industry demand is not keeping pace with capacity, expected to grow 9 percent this year while production grows just 3 percent. Long term, however, the little guys’ migraine lies elsewhere: As the giants expand plants and wafers and shrink transistors, they leave in their wake a sea of capacity in the older processes which they can exploit at economies of scale beyond the capabilities of smaller foundries. In low

production volumes of say a few thousand chips (a scenario more likely at smaller fabs), fixed costs for chip design and mask sets (close to a million dollars apiece) boost per-chip costs even in fully-amortized older facilities. And when fixed costs fade in the face of variable costs for production runs of millions, a few million more chips means a tide of cashflow for the larger and more aggressive fabs.

Many industries don’t require or can’t even use the densest chips. For instance, display panels get along fine at 250-nm and 350-nm geometries. But the giant fabs are exploiting this opportunity as well. Aware as early as three years ago of a potential capacity oversupply at 130-nm and 180-nm geometries as the major foundries move to 90 nm, the Taiwanese giant TSMC teamed with **OmniVision Technologies** (OVTI), a leading CMOS image-sensor provider, to develop the specialized technology necessary to bring CMOS sensors down to 130 nm. (Also entering the CMOS imager space are IBM, having recently teamed with **Eastman Kodak** [EK], and Agilent.) Further down scale, TSMC’s excess 200 mm capacity could climb to 30 percent this year, and in addition to CMOS image-sensors, new customers may come from liquid crystal display (LCD) drivers, flash memory, mixed-signal, and analog markets.

The largest IDMs and independents are said to face a process crash at nanometer geometries. As transistors shrink, they leak more power, and since chips with smaller transistors also have more transistors, there will tend to be more sitting around in the off-state leaking. When leakage power overtakes active power, smaller transistors are worse for the application, decreasing the need for leading-edge processes, which may never see the voracious volumes required to turn a profit.

This argument ignores both the efficiency gains of larger wafers, impressive advances in low-power processes, and the new applications made possible by denser chips. Ask Qualcomm, Altera, or NetLogic, all with hundreds of millions of transistors on their leading-edge devices. Innovative Ethernet passive optical network (EPON) vendor Teknovus (*GTR*, January 2005) tells us that cost is critical for them, and new processes save on costs. Using **STMicroelectronics** (STM), a European IDM ranked seventh worldwide in sales and larger than TSMC, Teknovus plans a rapid move to 90-nm geometries.

## Investing in China

Symptoms of superfab failure have yet to surface. Of the pure-play foundries, the top four captured about 82 percent of pure-play revenues in 2004, drifting down from 86 percent of revenues two years earlier but still servicing a huge majority of the expanding fabless com-

panies while acting as capacity buffers for IDMs.

The Chinese fabs have been among the most aggressive movers into new processes and capacity. Most notably, SMIC of Shanghai narrowly passed Singapore-based **Chartered Semiconductor Manufacturing** (CHRT) last year as the number three independent foundry in sales worldwide, nearly tripling revenues over 2003 and capturing 5.8 percent of the pure-play market (up from 1 percent in 2002). Though SMIC's 2004 sales were about a fourth of the sales of Taiwan's number two UMC, the smaller foundry will spend 80 percent as much as UMC on growth between 2004 and 2005. Though only an eighth the size of number one TSMC, SMIC capital outlays will reach 60 percent of the formidable Formosan's \$5 billion.

SMIC brought its first 300-mm fab into production last July in Beijing, adding to its four 200-mm fabs which have also been upgraded. Last summer, the foundry signed a contract with TI to manufacture advanced digital signal processors (DSPs) on 90-nm process technology, and SMIC now expects to start 90-nm manufacturing for other logic devices during the first half of this year. In an about-face to most of the industry, including its three pure-play rivals, revenues at the Shanghai shop *increased* by 6.1 percent sequentially in the last quarter of 2004, while full-year revenues surged 166 percent over 2003 compared to 28 percent for similar-sized Chartered, whose sales slipped 26 percent last quarter.

Investing far less in recent years than its rivals, Chartered now bears the burden of inefficient legacy fabs. Only now scaling to 130 nm, mostly for Broadcom, which will account for 60 percent of its revenues at this "process node," the company recently announced a partnership with **Advanced Micro Devices** (AMD) to propel the fab to 90 nm—but not until 2006. Although it could become a turn-around story over the next few years and is currently trading near a 52-week low, Chartered will need to make a stunning comeback in the face of declining utilization

and growing competition. The risks are too high, and this month we remove Chartered from the list.

SMIC faces its own challenges, including Chinese rivals **Grace Semiconductor**, **Shanghai Hua Hong NEC**, and even TSMC, presently building a 200-mm fab in Shanghai. Due to the global downturn, SMIC's gross profit margin decreased several percentage points sequentially in the fourth quarter while operating expenses increased because of R&D associated with the new 300-mm plant and the development of 90-nm technology. Over the first three quarters of 2004, capital spending exceeded cash flow from operations by \$833 million. With another \$1 billion in capital investments slated for this year, following on last year's \$2 billion, SMIC's current valuation multiples, comparable to TSMC's, may be a bit risky in the short-term. But our thesis remains unchanged: The foundry model is flourishing, and SMIC is the biggest foundry in the fastest growing nation, in the fastest growing region. SMIC's future technological credibility is provided by the almost thousand veteran engineers Richard Chang lured to the mainland from the island fab known as Taiwan. We think the risks are worth the potentially large rewards.

TSMC offers another way to invest in China, providing a safer haven but likely lower returns. The foundry has long been the most profitable semiconductor company outside of Intel—even while investing more in plant and processes than its largest independent rivals. Free cash flow (cash flow from operations minus capital spending) has almost doubled to \$2.1 billion over the past two years, with a corresponding doubling of working capital to \$3.6 billion and long-term debt of only \$830 million. Currently well valued, TSMC stock may see limited upside this year, but the company has rivaled Intel in leading the industry into new process innovations. It continues to show the economic prowess and technological foresight to maintain its pioneering dominance in the new horizontal topology of the global semiconductor industry.

– *Charlie Burger, February 10, 2005*

## Got Questions?

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### GILDER TECHNOLOGY REPORT

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291A MAIN STREET, GREAT BARRINGTON, MA 01230, TEL: (413) 644-2100, FAX: (413) 644-2123 • EMAIL: [INFO@GILDER.COM](mailto:INFO@GILDER.COM)

**EDITOR IN CHIEF**  
George Gilder

**EDITORS**  
Nick Tredennick  
Brion Shimamoto

**EXECUTIVE EDITOR**  
Bret Swanson

**TECHNOLOGY ANALYST**  
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