



HENDERSON

ELECTRONIC MARKET FORECAST

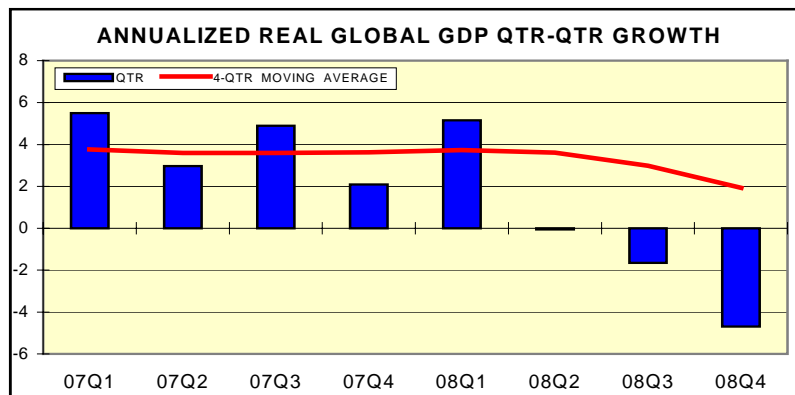
Quarterly Forecast Update

VOL. XXVII, NO. 3 March 2009

GLOBAL BUSINESS ENVIRONMENT

RECESSION WIDENS AND DEEPENS (See Figure 1)

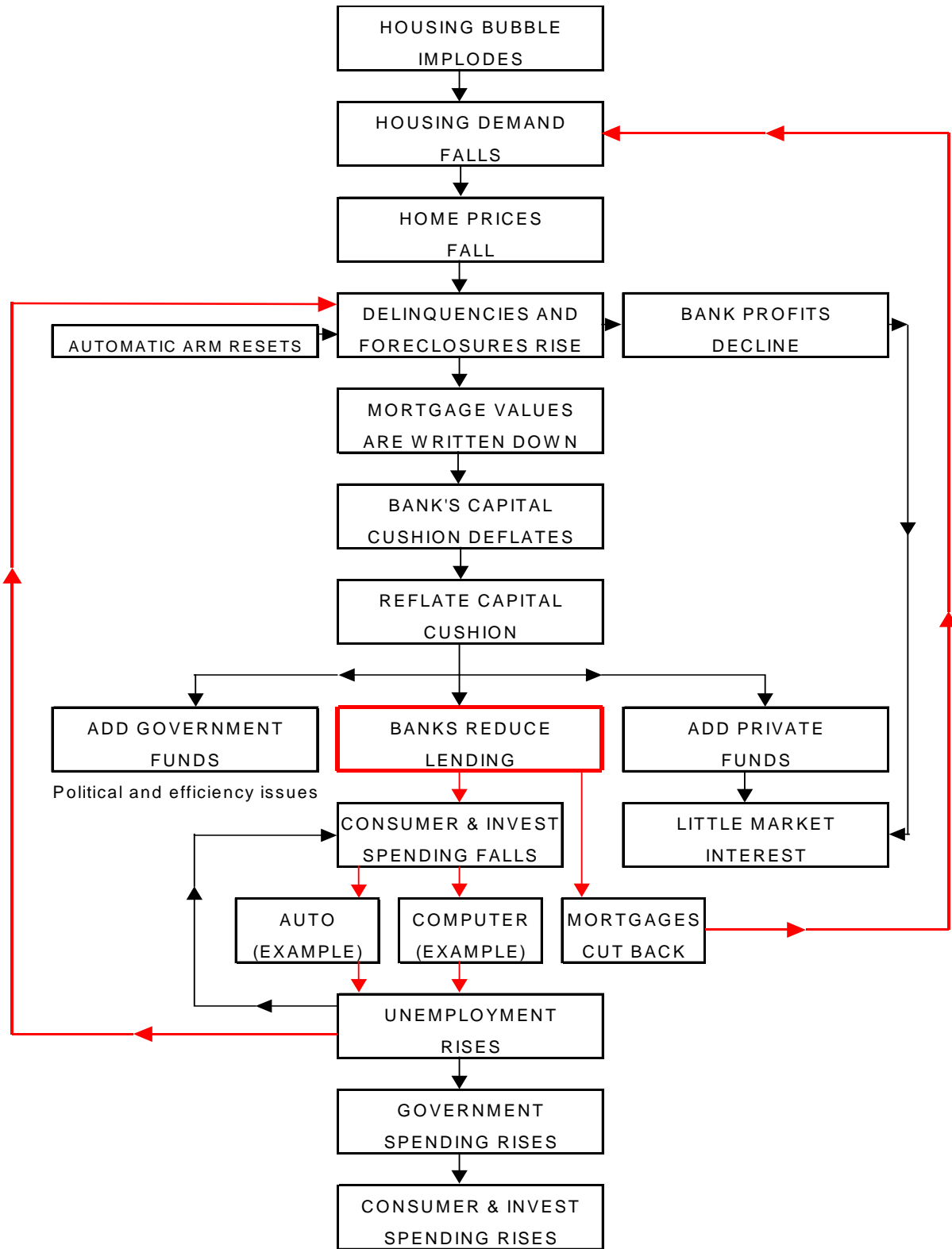
Global GDP plunged at a shocking 4.7 percent rate in the fourth quarter The decision to let Lehman Brothers fail last September was based on a combination of principles and politics. On the principles side, the conservative Bush Administration was temperamentally in favor of letting financial markets sort themselves out. It was firmly against rewarding bad financial decisions that would set a bad precedent for future risky behavior, so-called moral hazard. As a matter of politics, a Lehman bailout would have set off a political firestorm with only weeks to go before the elections. Moreover, the full impact of the decision was not obvious at the time. But in retrospect, the decision was a fatal mistake that became more evident as the Gross Domestic Product (GDP) statistics for the fourth quarter trickled in. On an annualized basis, world economic activity plunged at a 4.7 percent annualized rate during the fourth quarter. West Europe contracted at a 5.9 percent rate, while the US dove at a 6.2 percent pace. But the most shocking figure came out of Japan where GDP absolutely imploded at a 12.7 percent rate.



Even the Chinese economy contracted in the fourth quarter Official statistics from China show that GDP grew by 6.8 percent in the fourth quarter on a *year-to-year* basis. But the 6.8 percent gain masks a sharp deceleration between the third and the fourth quarter. Seasonal adjustments notwithstanding, Chinese GDP *fell* at a 4.2 percent annualized pace during the fourth quarter. Chinese exports fell dramatically, a trend that continued in January when they fell a further 17.5 percent. Asia-Pacific countries that had hoped to be “decoupled” from the economic problems in the developed countries were sorely disappointed. For example, economic activity in Singapore fell at a 16.9 percent pace during the fourth quarter, while South Korea’s GDP plunged at a 20.8 percent rate. In short, the recession has widened and deepened.

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ADVERSE FEEDBACK LOOPS



ARM: Adjustable Rate Mortgage

A vicious cycle by any other name The global financial system is locked in a vicious cycle that includes mortgage-security write-downs and declining bank capital, a process now known as an “Adverse Feedback Loop.” A somewhat simplified portrayal of how the ongoing financial market meltdown crimps bank lending and, ultimately, electronic equipment markets is illustrated on page 2. The current economic downturn was sparked by the implosion of the housing bubbles in Australia, Ireland, Spain, the UK and, particularly, the US. The resultant drop in housing demand and home prices created a rise in delinquencies and foreclosures. But that process was supercharged by so-called “resets” of US adjustable-rate mortgages (ARMs) that effectively raised monthly payments to unaffordable levels for many homeowners. As foreclosures rose, banks were forced to write down the value of the mortgage securities that backed depreciated properties.

During normal times, banks would have had a sufficiently large capital cushion to comfortably absorb the mortgage losses. But this time around, the preponderance of subprime mortgages, along with the collapse of Lehman Brothers, created unprecedented drops in mortgage values and cataclysmic drops in the stock-market values of the banks themselves. As the banks attempted to “reflate” their capital cushion to legally mandated levels, private equity sources ultimately proved to be inadequate to the task because of bankruptcy fears.

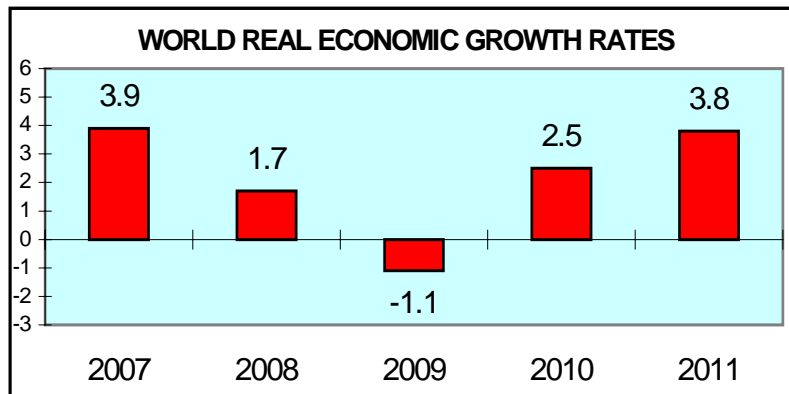
And while huge injections of government funds have now largely stabilized the financial system, it was not before banks cut back on lending in order to effectively increase their base capital through the normal cash inflow from amortization and payoffs of loans previously made. Because banks were no longer recycling loan payments and payoffs back into new loans for, say, automobiles and corporate computer purchases, industries that depended on those loans saw their sales drop sharply.

The resultant layoffs created further loan delinquencies and mortgage foreclosures, as illustrated by the red feedback loop on the left side of the flow diagram. Arguably of more importance was the impact that reduced bank lending had on *new* mortgages. The mortgage cutback, as well higher interest rates and more stringent loan-qualification requirements, effectively reduced demand for housing. That included previously-owned homes that might have been rescued from foreclosure, as illustrated by the bold red feedback loop on the right side of the flow diagram.

It is the intention of the Obama Administration to break the self-reinforcing effects of the Adverse Feedback Loops by injecting more liquidity into the financial system and through the recently legislated \$787 billion stimulus package. The latter is represented by the bottom two boxes of the flow diagram.

International trade is hit hard Not shown in the flow diagram is the cutback in lending for international trade financing, which facilitates the everyday global flow of goods and services. The consequences of reduced trade financing are evidenced in the previously-mentioned collapse of international trade and, therefore, GDP of export-oriented countries. Naturally, commodity-oriented countries such as those providing oil and minerals have been hit hard. But so, too, have some advanced economies. For example, Germany depends on exports for over 40 percent of its economic activity. And German GDP fell at a gut-wrenching 8.2 percent annualized rate during the fourth quarter of last year.

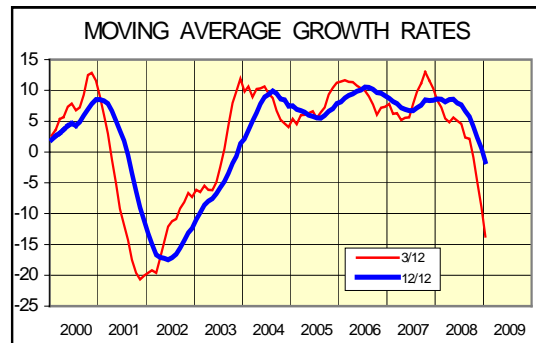
The recovery will be slow Although the largest banks are no longer in danger of *immediate* collapse, the overall global response to the financial crisis has proven to be sluggish and, at times, misdirected. Policy differences (rescue versus inflation fears) and politics (leadership versus responding to voter rage) have prevented the rescue efforts from getting ahead of the curve. In particular, much of the fiscal stimulus legislated in the US and China will be slow to impact the designated areas. That will be especially true for infrastructure spending. Still, the \$787 billion US rescue package and the \$585 billion Chinese effort, along with smaller plans by Europe and Japan, will lift the global economy out of recession, but not before 2010. Meanwhile, a 1.1 percent drop in world GDP is forecast for 2009, and a rather disappointing 2.5 percent economic gain is predicted for next year. It will not be until 2011 that the global economy regains its footing. A 3.8 percent advance is predicted for that year, as shown below. A breakout of the regional expectations can be found in **Figure 1**.



EQUIPMENT OUTPUT DOWN 12 PERCENT IN 2009 (See Figure 2)

Larger than expected corporate and consumer retrenchments As discussed earlier, the financial crisis prompted banks to cut back their lending to corporations and consumers. The resultant economic slowdown was amplified by spending reductions by companies and families who decided to build up cash reserves. In the US, investment spending has been hard hit. Outlays for equipment and software plummeted at a 28.8 percent rate during the fourth quarter. Consumer spending for durable goods was not far behind as outlays fell at a 22.1 percent pace. Of course, corporate and consumer behavior in the US was part of a worldwide retrenchment. Moreover, cutbacks in electronic equipment purchases were accompanied by sharp price reductions as companies up and down the supply chain scrambled to reduce inventory. Consequently, the global production of electronic equipment began to tail off early in the fourth quarter and accelerated thereafter. By January, global production of electronic equipment had fallen to an annualized value of \$1.55 trillion, compared to \$1.78 trillion in October and \$1.85 trillion in November 2007, as shown in the left chart below. As a result, the 3-month moving average (3/12) growth rate has been in freefall. The January 2009 reading was -13.7 percent, which means that the value of output during the period of November 2008 through January 2009 was 13.7 percent lower than the same three months a year earlier. On a 12-month moving average (12/12) basis, 2008 ended with a 0.6 percent reading in December, which corresponds to the overall growth rate of electronic equipment last year.

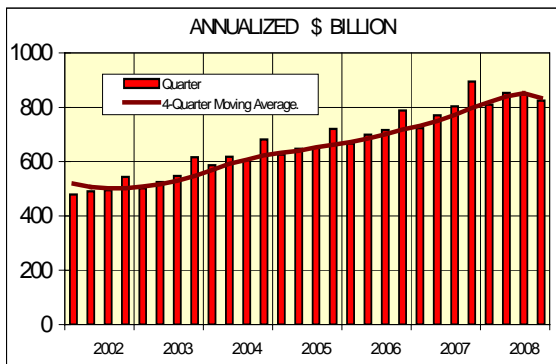
WORLD ELECTRONIC EQUIPMENT PRODUCTION



Sources include: Custer Consulting Group, Electronic Outlook Corp. and Henderson Ventures

Corporate revenues slightly outperformed equipment markets Based on a sample of 61 public companies, electronics manufacturers booked revenues at an \$824 billion rate during the fourth quarter of 2008. That compared to \$895 billion during the same quarter of 2007, as shown in the left chart below. That resulted in a 7.9 percent decline in sales. The results were little better than the 9.0 percent drop in production. The dollar-denominated sales were adversely impacted by a weaker euro in the fourth quarter. Moreover, the revenue streams are all but certain to deteriorate further during the first two quarters of 2009, as customers forego expansion opportunities in favor of cash accumulation while the economic environment remains clouded.

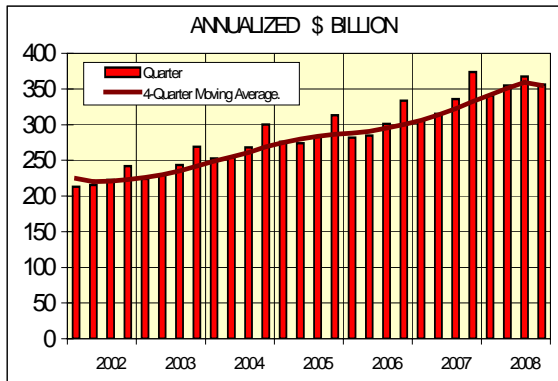
REVENUE FOR 61 PUBLIC COMPANIES



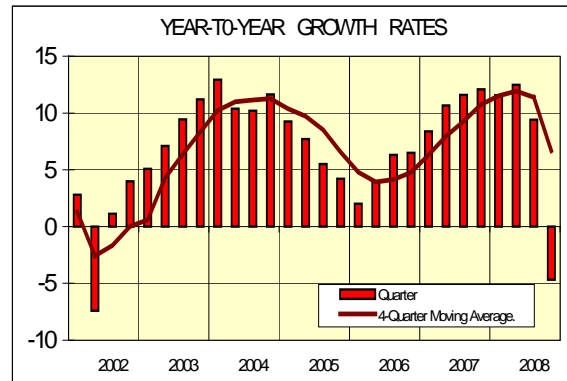
Source: Custer Consulting/Financial Reports

Computer equipment company revenues down 4.7 percent in the fourth quarter The computer equipment sector accounts for more than 40 percent of the revenue captured by the 61 public companies previously illustrated above. Consequently, the patterns in the computer industry don't usually deviate tremendously from the total company sample. However, fourth-quarter computer company revenues dropped only 4.7 percent versus the 7.9 percent fall in the 61-company sample. Some of the difference can be explained by the large service revenues garnered by Hewlett-Packard and IBM in their consulting operations. Cash flows for hardware, particularly personal computers (PCs), were substantially worse, as discussed later.

REVENUE FOR 11 PUBLIC COMPUTER EQUIPMENT SUPPLIERS



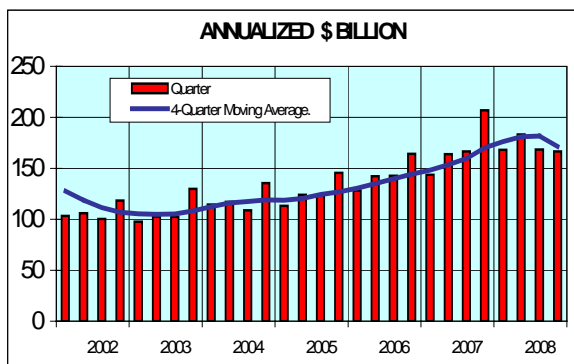
Apple, Cray, Creative Technology, Dell, Gateway, HP, IBM Mercury, NCR, Sun Micro, Unisys



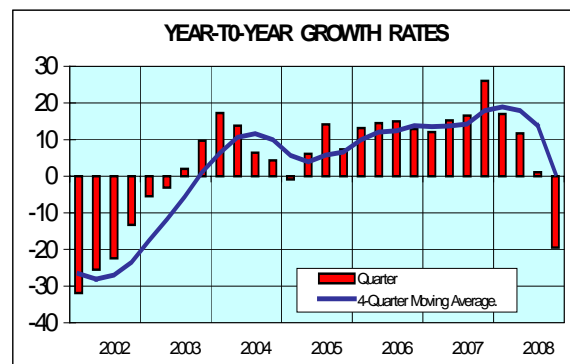
Source: Custer Consulting/Annual Reports

Communication sales plummet In contrast to the moderate decline posted by the computer industry, purveyors of communication hardware saw their sales plunge by 19.4 percent during the fourth quarter of 2008, compared to the same period a year earlier, as shown in the right chart below. The annualized rate of revenue fell to \$167 billion, compared to \$207 billion during 2007. The deep decline can be traced to a like pattern for cellular handsets, as illustrated in the bottom-left chart of **Figure 2**. That is, unit shipments during the fourth quarter were 6.1 percent lower than the same period in 2007. And because prices were falling rapidly, mobile handset revenues probably declined by roughly 15 percent during the fourth quarter. Moreover, mobile infrastructure companies were suffering sharply slower orders from apprehensive service providers. The industry’s problems were clearly underscored by the January 2009 bankruptcy filing by Nortel Networks.

REVENUE FOR 5 PUBLIC COMMUNICATIONS EQUIPMENT SUPPLIERS



Alcatel-Lucent, Ericsson, Motorola, Nokia, Nortel

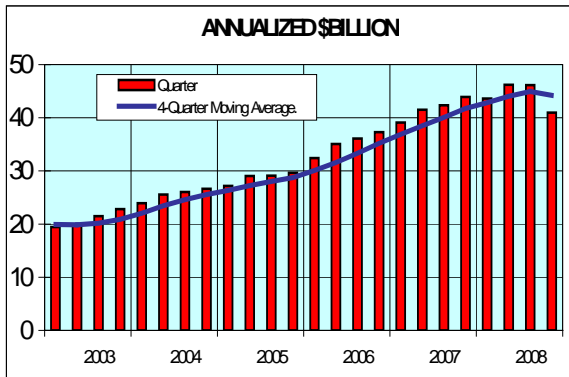


Source: Custer Consulting/Annual Reports

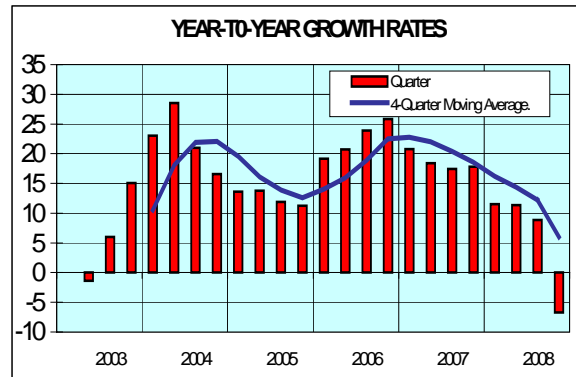
Even Internet equipment suppliers are feeling the chill Despite rising capacity utilization of the communication links managed by telephone companies and cable operators, weaker revenue growth, along with cash conservation moves, prompted a curtailment of equipment purchases. As a result, our sample of five Internet equipment suppliers saw their fourth-quarter revenues decline by 6.7 percent compared to the final three months of 2007. Moreover, Cisco Systems reported that revenue fell by 7.5 percent in its second fiscal quarter, which ended January 24th.

The company estimated that revenue could drop 15-20 percent in the current quarter. Cisco's downturn comes despite using some of its multi-billion dollar cash hoard to finance the purchases by some of its customers. But because Internet traffic continues to surge, network suppliers are likely to come out of the ongoing industry recession sooner than most other sectors.

REVENUE FOR 5 PUBLIC INTERNET EQUIPMENT SUPPLIERS



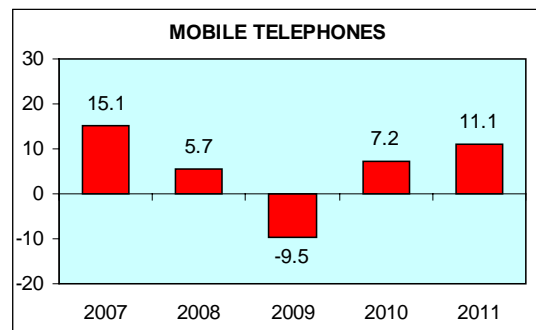
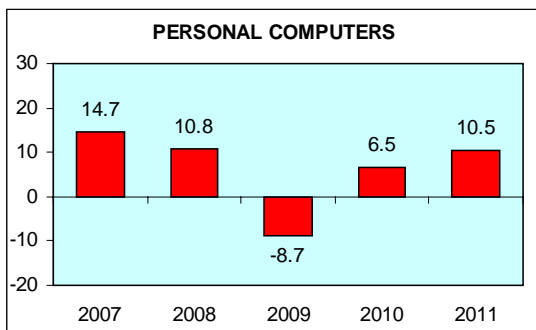
Cisco, Juniper Networks, Netgear, Ruckus Networks, Sonus Networks



Source: Oster Consulting/Annual Reports

PC prospects are miserable As the economic outlook has degenerated, so too have prospects for the electronics industry. That is particularly true for PCs, which had been expected to post small unit gains as recently as last December. But prospects turned chilly during the fourth quarter when unit shipments grew by only 1.3 percent compared to the same quarter in 2007, as illustrated by the 3/12 curve in **Figure 2**. The sharp second-half market deceleration belies the 10.8 percent increase in deliveries for 2008 overall. Worldwide PC shipments hit 300 million units last year, compared to 271 million in 2007, as listed in the table in **Figure 2**. What's more, the ongoing market retrenchment has prompted a large downward revision of our 2009 forecast. An 8.7 percent drop in PC shipments is predicted for 2009, despite huge gains for small-format laptops, otherwise known as netbooks.

**GLOBAL SHIPMENTS OF PERSONAL COMPUTERS AND MOBILE PHONES
Unit Growth Rates**



Netbook shipments are predicted to hit 20 million units this year compared to 12 million in 2008, thereby resulting in a 57 percent gain. But the success of netbooks will come at the expense of other laptops, which will grow by only 6 percent this year versus growth rates of as much as 40 percent annually in recent years.

As might be surmised, the desktop segment will bear the brunt of the ongoing market reversal. Desktops are slated to decline by 27 percent this year. Looking ahead, shipments during 2010 are expected to perk up a bit. A 6.5 percent gain is predicated on a moderately improved economic environment, growing obsolescence and the release of Microsoft's Windows 7 operating system (OS) late this year. By 2011, a full-fledged economic recovery will bring a return of double-digit growth rates. A 10.5 percent expansion is predicted for that year, as shown in the left chart above.

Mobile phones down 9.5 percent this year The absence of major new features combined with a general cutback in spending by consumers and corporations created a 6.1 percent drop in cellphone shipments during the fourth quarter of 2008, as illustrated in the bottom-left chart of **Figure 2**. And while a modest 5.7 percent gain was posted for 2008 overall, unit deliveries are predicted to fall by 9.5 percent this year as the vast majority of mobile handset owners will find little reason to upgrade. The exception will be in the Third-Generation (3G)/Smart Phone sector as new buyers flock to the Apple iPhone and fiercely-loyal BlackBerry owners continue to upgrade. The Smart Phone segment is getting a big boost from the availability of third-party applications that are now downloadable to some handsets. But a return to double-digit gains for the overall market will not appear until 2011, when an 11.1 percent gain is predicted.

A double-digit drop in equipment production during 2009 The large decline in unit deliveries of PCs and cellphones forecast for this year will be accompanied by major price declines, thereby yielding deep double-digit declines for the corresponding revenue streams. Nor will the Computer and Communication sectors be the only areas impacted. For example, drops of as much as 50 percent are forecast for the Semiconductor Equipment Manufacturing segment.

Consumer retrenchments will create double-digit drops in both Consumer and Automotive Electronics. In the latter case, the sharp 2008 US vehicle downturn will spread to the rest of the world during 2009. That is, global car sales, which fell by about 5 percent in 2008, are slated for a 9 percent drop in 2009.

Military Electronics is the only major equipment sector expected to post positive gains during 2009. But the only significant gains outside of the US will be in China and Russia. Overall, global electronic equipment production is predicted to fall by a massive 11.9 percent this year versus a 0.2 percent gain in 2008. What's more, the recovery will be tepid. Only a 4.6 percent advance is predicted for 2010, followed by a more respectable 8.3 percent gain in 2011, as listed in the **Figure 2** table.

Targets of opportunity amongst the carrion The current economic and business environments are truly ugly. It may be, therefore, tempting to become fatalistically inactive marketing wise. But during every downturn there are still high-growth opportunities. And some of them are quite large—like LCD TVs, which are still growing at double-digit rates. Therefore, a partial list of possible prospects has been assembled on page 9 to act as a catalyst for market/sales planning. Some of the listed categories offer immediate possibilities while others, such as smart grids, will not fully blossom for some time. Moreover, some of the opportunities may be incompatible with the technological reach or cost structure of many companies. Most of the listed segments are self-explanatory, but a few are worth commenting on.

OPPORTUNITIES FOR MULTIPLE PLANNING HORIZONS

Consumer

- MP3 Players
- Mobile Navigation
- Blue Ray Players
- LCD TV – Double-digit growth continues

Communications

- 3G/Smart Mobile Phones
- Dual-Mode Cell – WiFi Handsets
- Broadband Internet – Traffic is still booming
- Wi-Max

Computer

Laptops, especially Netbooks – 50 percent growth

Military

But positive growth will turn negative in 2011

Medical Electronics

- Electronic Recordkeeping – Computers and terminals
- Personal Health Monitoring – www.continuaalliance.org

Industrial Electronics

- Commercial Avionics – Positive growth through 2012
- Teleconferencing
- Pollution Control – Cap and trade for CO₂ starts in 2012
- Smart Infrastructure – Roads, water, bridges and buildings
- Clean Energy – Wind, solar, smart grid – www.gridwise.org

Automotive Electronics

Fuel economy for traditional vehicles, hybrids and electric cars – Solid growth for those who are just entering the market

As part of Personal Health Monitoring, the Continua Health Alliance, a fairly large group of companies, is promoting so-called “telehealth.” The concept marries electronic sensors that monitor a person’s vital signs to a communication link that could connect to a doctor’s office for, say, glucose readings for diabetics. Such a system could also transmit, for instance, blood pressure measurements to a local PC for personal record keeping.

Under Commercial Avionics, the economic downturn is creating aircraft cancellations for Airbus and Boeing. However, the backlogs are so huge there will be an expanding business base for several years.

Under Pollution Control, the \$787 billion stimulus plan includes a “cap and trade” program for reducing CO2 emissions. Licenses are slated to be auctioned in 2012. While the program is fraught with political uncertainties, it could be a very large opportunity for industrial electronics suppliers.

The desire for clean energy is born of both energy-independence aspirations as well as environmental concerns. But if wind and solar energy are to ultimately account for 20 percent of US electrical energy, the transmission and distribution network will have to be upgraded. A large industry alliance has been created to address the problems and opportunities of a so-called smart grid. More information can be found at www.gridwise.org.

And finally, the suggestion that automotive electronics could offer a growth opportunity might seem laughable. However, for companies that decide to get involved *this year* at the bottom of the market will find potentially strong growth opportunities even if the customer base is fairly shaky in some instances.

FOCUS ON THE UNITED STATES

THE US RECESSION DEEPENS (See Figure 3)

Fourth-quarter GDP revised down to a 6.2 percent plunge The US economic environment is miserable, at best. The national unemployment rate passed through 8.1 percent in February. In the Silicon Valley, the jobless rate hit 9.6 percent! The stock market has lost more than half of its value since a recent peak was reached 16 months ago. The Dow Jones Industrial Average is now at its lowest point since 1997, the Purchasing Managers Index for manufacturing was 35.8 in February, and consumer confidence was at a record low. Therefore, it is not surprising that US consumers have jacked up their savings rates defensively to reach 5 percent of disposable income in January. While that represents good long-term news, it interferes with the recovery because it conflicts with the fiscal and monetary stimulus plans.

Further bad news came from the Department of Commerce (DOC), which reported that GDP actually declined at a 6.2 percent annualized rate during the fourth quarter versus the original estimate of a 3.8 percent falloff. The revision is significant on two counts. First, the increased negative economic momentum is a psychological downer. Second, and more substantially, it puts the starting point for 2009 economic activity further into a hole. It will be, therefore, more difficult (nearly impossible, actually) to achieve positive growth for 2009 overall.

With the exception of defense outlays, the fourth-quarter statistics were uniformly miserable, as illustrated in the top half of **Figure 3**. Durable goods plunged at a 22.1 percent annualized rate, while equipment and software investment was free-falling at a 28.8 percent pace and exports were plummeting at a 23.6 percent rate. The only consoling number in the DOC report was for national defense, which expanded at a 3.2 percent pace. But even here, the modest growth for the fourth quarter represented a sharp deceleration from the 18.0 percent number put up for the third quarter.

Stimulus plans will help As noted in our opening discussions, the absence of financing has been a major impediment to investment and consumer spending as evidenced by the horrible fourth-quarter numbers. And the sickening trends continued during the first two months of 2009 when US automotive vehicle sales continued to crater. Light vehicle sales were down 41.4 percent during January and 39.4 percent in February, as measured on a year-to-year basis. The financing problem can be traced to the virtual disappearance of the securities that have traditionally backed consumer credit. In the case of automotive vehicles, local banks would package a large number of loans for “securitization” by Wall Street bankers. In the recent past, Wall Street firms issued as much as \$1 trillion worth of those securities annually. But for the fourth quarter of 2008, the absence of liquidity reduced issuance of those securities to an annualized rate of just \$32 billion, or 0.3 percent of a good year.

In order to get credit flowing to consumer markets again, the Federal Reserve (Fed), after much delay, just launched the so-called Term Asset Backed Securities Loan Facility (TALF), which will finance up to \$1 trillion worth of new lending to consumers and businesses.

Meanwhile, over at the Treasury, the Obama team announced a separate initiative to form government-private partnerships to buy \$500 billion to \$1 trillion of distressed assets as part of a reconfigured \$700 billion bank bailout plan.

Of course, the huge \$787 billion stimulus plan that will cut taxes and make huge infrastructure investments, as well as deliver a dollop or two of pork, has now been set in motion. The multi-trillion dollar ensemble of fiscal and monetary plans is expected to create a massive budget deficit equal to roughly 12 percent of GDP in 2009. However, the odds favor a successful rescue, eventually. Unfortunately, many of the programs will not arrive in time to reverse negative economic momentum this year. Whereas positive quarter-to-quarter economic growth had been expected to emerge during the second half of this year, it now appears that the first quarter of 2010 is a safer bet. Consequently, GDP is predicted to fall by 2.7 percent this year, which represents the worst performance since GDP plunged by 11.0 percent in 1946 as the country made the transition to a peacetime economy. As the impact of the stimulus packages, particularly infrastructure spending, exert greater support next year, GDP will manage a 2.3 percent gain, followed by a more robust 3.6 percent advance in 2011, as documented in the table accompanying **Figure 3**.

MILITARY ELECTRONICS BATTLE WORSE RESULTS (See Figure 4 & Table 1)

Overall equipment market sliding gracefully, thus far Statistics from September 2008 through January 2009 show that orders for electronic equipment have been declining continuously. That said, the falloff has been rather gentle thus far, as shown in the top-left chart of **Figure 4**. The January figure for orders was -4.8 percent on a 3-month moving average (3/12) basis. That means that bookings during November, December and January were 4.8 percent lower than the same three months a year earlier. Perhaps more surprising, given the ghastly industry news during the last few months, is the behavior of the 12-month moving average (12/12) growth rate statistic. January produced the first negative value since early 2004. The -0.2 percentage point reading indicates that the cumulative value of deliveries between February 2008 and January 2009 was 0.2 percent lower than the previous 12-month period.

Military and Industrial & Instrument are still doing well Although the order stream for military electronics remains ever-volatile, the 3/12 growth rate for January produced another positive result. However, the January growth rate was a rather lean 0.8 percent. But prior orders, which typically have long-lead schedules, continue to provide strong shipments growth. The 12/12 measure for January was 7.6 percent, compared to an 8.4 percent reading two months earlier.

The Industrial & Instrument (I&I) sector provided similar results. Orders were up 3.6 percent in January, while the 12/12 shipments measure came in at a sturdy 6.6 percent. While the I&I segment is subject to economic pressures similar to other Non-Military markets, orders and shipments typically lag the ups and downs of other Commercial Electronics sectors such as Communications and Computers. Moreover, the I&I sector includes Medical Electronics, which is both huge and partially insulated from economic downturns. Statistics for orders and shipments for both the Military and I&I sectors can be found in the table accompanying **Figure 4**.

The Obama Administration provides some defense budget visibility During the last week of February, the Obama Administration published an overview of the planned fiscal 2010 budget for the US. But rather than providing a detailed line-item proposal, the document essentially lays out a roadmap for the President's strategic initiatives. For calendar year 2010, the Administration is proposing total Department of Defense spending of \$664 billion, compared to \$655 billion for 2009. Those figures amount to a 1.4 percent increase in overall 2010 spending.

However, the so-called baseline budget, which excludes operations for the Iraq and Afghanistan wars, projects spending of \$513 billion and \$534 billion for 2009 and 2010, respectively. Those figures suggest a 4 percent increase for those parts of the defense budget that include electronics-rich programs. Unfortunately, budget detail will not be available until April.

Meanwhile, US military electronics production is expected to grow by 4.5 percent this year after a 7.1 percent increase in 2008. But because President Obama has signaled a strategic shift away from large weapons programs, military electronics production is forecast to decelerate through 2011, when an outright 3.2 percent decline in US military electronics production is predicted, as shown in the bottom-right chart of **Figure 4**.

Orders for computer and communication equipment fall at double-digit rates While the Military and I&I sectors of the electronics industry have been holding up relatively well, the Computer and Communication sectors have been directly and indirectly impacted by the slump in PCs and mobile telephones. For January, computer equipment orders fell at a 12.9 percent rate, while communications gear slid at a 10.4 percent pace. And these two sectors are predicted to be the hardest-hit segments of the US electronics industry during 2009, Automotive notwithstanding. Communication hardware is forecast to be down 16.4 percent this year, while Computer equipment is predicted to be off 20.7 percent. The more dire expectations for the Computer equipment sector can be traced to not only the weakness of the PC sector, but the announced plan by Dell Computer to shut down much of its US PC assembly operations.

Another horrible year for automotive electronics During 2008, US vehicle sales fell by 18.0 percent, while production dropped by 19.1 percent. During 2009, another 13 percent decline is expected for vehicle sales. But Detroit's Big Three are expected to post substantially worse results. Moreover, automotive electronics will be increasingly made offshore because transplant manufacturers will generally import most of their electronics, and vehicles sporting Detroit nameplates will increasingly outsource their requirements to offshore vendors. Consequently, US automotive electronics production is predicted to be down 24.4 percent this year, after a 22.7 percent decline in 2008, as noted in **Table 1**.

I&I will fall by "only" 10.5 percent in 2009 The I&I sector tends to be less susceptible to extreme market downturns, overall. But some segments, including the Semiconductor Manufacturing Equipment industry, are volatile in the extreme. That said, the I&I industry is expected to suffer less than the Computer and Communication sectors. A 10.5 percent drop is predicted for 2009.

Overall, output of the US electronic equipment industry is predicted to fall by 10.6 percent this year, after a 0.2 percent dip in 2008. Moreover, the recovery is predicted to be tepid. A 3.5 percent increase is forecast for 2010 and a 4.5 percent gain is slated for 2011. The unusually sluggish recovery can be traced to the contrary trajectory of Military Electronics. That is, Military Electronics is predicted to contract by 3.2 percent in 2011, while Non-Military hardware is forecast to grow by 7.4 percent. A breakdown of the US market forecast can be found in **Table 1**.

SEMICONDUCTOR MARKETS

A 23 PERCENT PLUNGE FOR 2009 (See Figures 6-8 and Tables 2 & 3)

Inventory is still out of control As was the case in the 2000-2001 cycle, total inventory held by electronic equipment and component manufacturers is following a steep upward trajectory. The combined total of finished goods, work-in-process (WIP) and raw inventory hit 48.2 days in January, which is not far below the 52.4-day peak posted during July 2001, as shown in the top-left chart of **Figure 6**. As noted in previous reports, WIP has been the major contributor to the current runup as cycle times slow and assemblies remain unfinished.

Semiconductor orders have plunged Based on synthesized IC orders provided by VLSI Research of San Jose, CA, the 3/12 orders curve for global semiconductor bookings fell to -60.2 percent in December, a vivid reflection of the miserable 2008 holiday-selling season. The December figure closely approximates the -60.6 percent plunge turned in during April 2001. Those two performances were, by far, the worst in over two decades. For January, the bookings result was marginally better. Orders were declining at a 57.3 percent rate, as shown in the top-right chart of **Figure 7**. The orders curve has dropped approximately 10 percentage points in both December and January.

The market faces aggressive inventory divestment policies. The shear drop in bookings is paralleled by a similar trajectory for unit growth rates, as illustrated in the top-left chart of **Figure 7**. That is, unit shipments were down 30.8 percent in January. Billings were down 28.6 percent in January.

Tightly packed regional results On a 3/12 basis, the regional shipments show a fairly consistent trend, with January growth rates between -21 percent and -34 percent. Japan had the “strongest” performance at -21.2 percent, but the results were significantly affected by a 16 percent appreciation of the yen. Had the results listed in the table accompanying **Figure 7** been denominated in either euros or yen, the Americas would have produced the strongest results. Again, the relative strength of Military and I&I markets, along with a paucity of cellphone and PC production, helped produce those results.

Looking forward, there is little doubt that the year will be a traumatic one for the industry. A 23.3 percent contraction is currently envisioned for 2009. However, our forecast has more than its usual share of uncertainty. Exchange rates, possible mergers that might support prices and the uncertainty regarding the success of the global economic stimulus packages make this year’s forecast particularly dicey. Notwithstanding that impediment, growth rates are predicted to rebound to 8.9 percent in 2010 and 19.4 percent in 2011. A breakdown of regions and product sectors can be found in **Tables 2** and **3**, respectively.

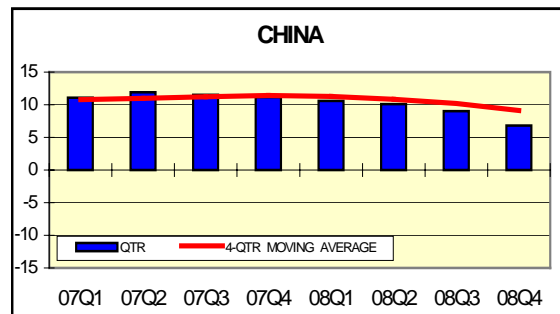
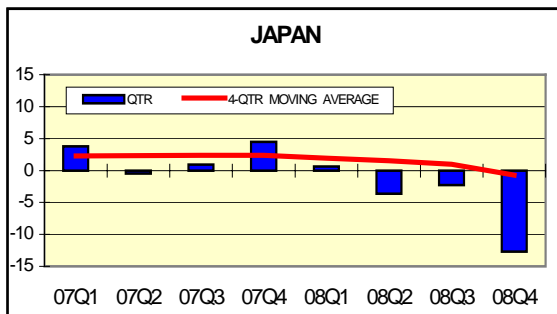
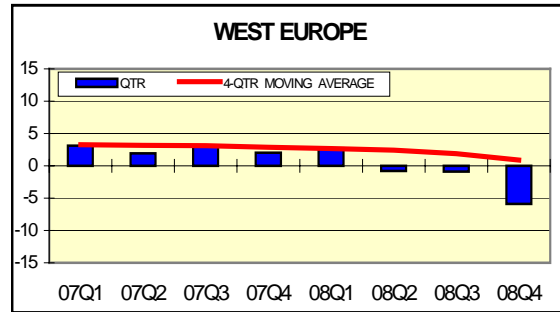
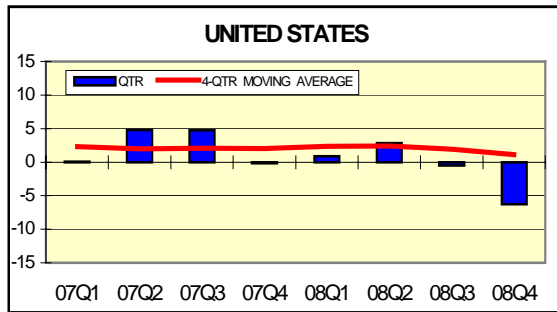
ADDITIONAL TREND STATISTICS (See Figures 11 & 12)

Statistics are simply awful As noted earlier, consumer confidence hit a record low in February of 25.0. The Purchasing Managers Index (PMI) from the Institute of Supply Management was not much better. The February statistic was 35.8, which actually represented two months of marginal improvement from the 32.9 reading in December. Similarly, the Index of Leading Indicators edged up in both December and January, which could possibly be the start of a trend.

During much of 2008, the dollar depreciated against its major trading partners. But international money markets have generally turned of late. The dollar has begun to appreciate once more, putting US manufacturers at a disadvantage. Recent statistics for the indicators just discussed can be found in **Figure 11**.

Industrial production and capacity utilization are plummeting The left side of **Figure 12** presents the Industrial Production Index (IPI) trends for four electronic industry sectors. All segments, with the exception of Communication, are heading south rapidly. The IPI for Communication Equipment is holding fairly steady, even as capacity utilization has fallen. But the tailoff in the Communication sector in terms of capacity utilization is nothing compared to the Computer & Office sector, which could only support a 56.0 percent utilization rate in January, as shown on the right side of **Figure 12**. In short, market conditions are truly ugly.

FIGURE 1: GLOBAL ECONOMIC OVERVIEW
Constant Dollar Growth Rates



CATEGORY	07Q1	07Q2	07Q3	07Q4	08Q1	08Q2	08Q3	08Q4	2007	2008	2009	2010	2011
UNITED STATES	0.0	4.8	4.8	-0.2	0.9	2.8	-0.5	-6.2	2.0	1.1	-2.7	2.3	3.6
WEST EUROPE	3.1	1.9	3.1	2.0	2.7	-0.8	-0.9	-5.9	2.9	0.5	-2.4	0.5	1.7
JAPAN	3.8	-0.5	0.9	4.5	0.6	-3.6	-2.3	-12.7	2.4	-0.2	-3.8	1.0	2.8
CHINA (YR-TO-YR)	11.1	11.9	11.5	11.2	10.6	10.1	9.0	6.8	11.6	9.0	5.8	7.5	8.8
WORLD	3.3	3.5	3.8	3.9	3.8	3.0	1.4	-0.4	3.9	1.7	-1.1	2.5	3.8

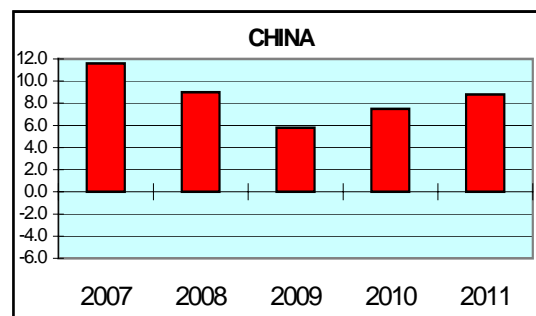
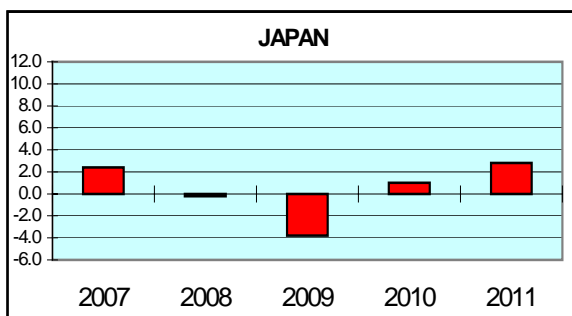
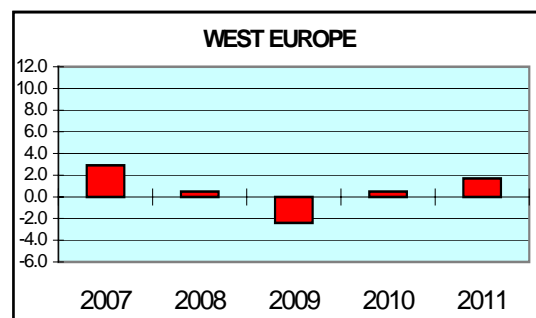
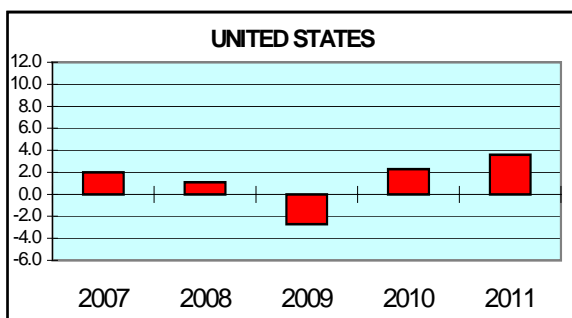
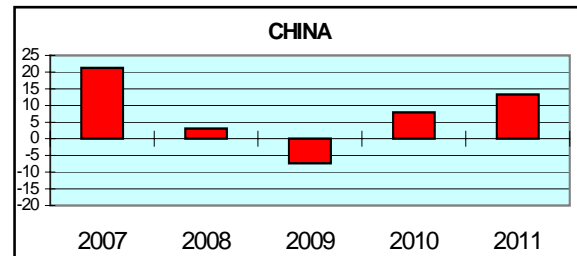
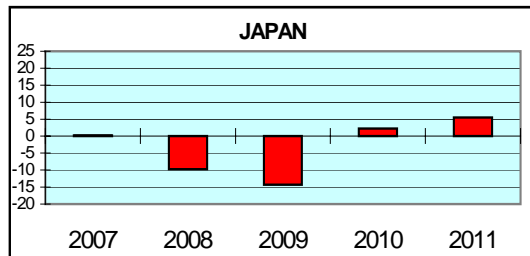
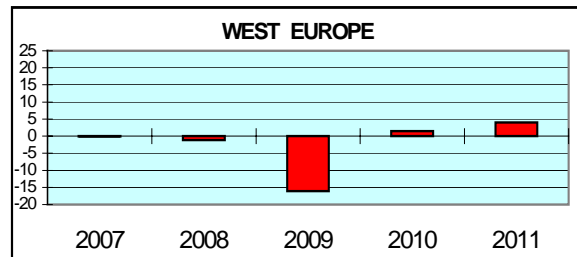
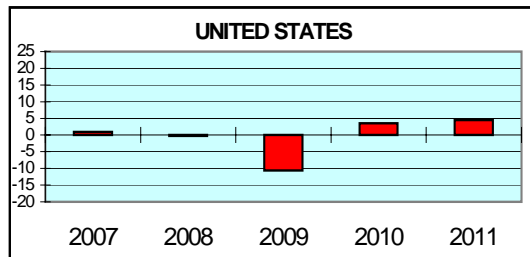


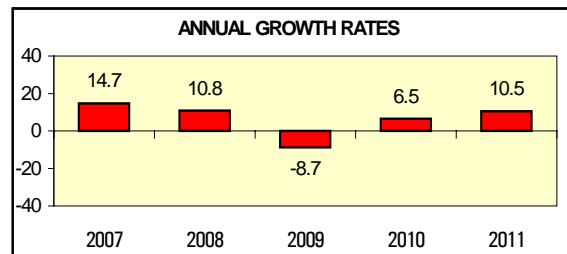
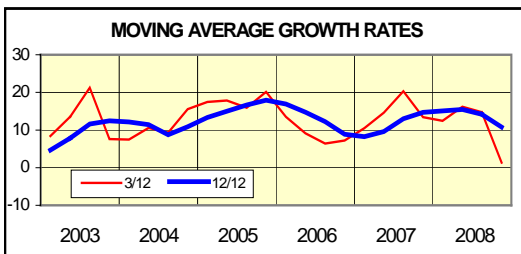
FIGURE 2: WORLD ELECTRONIC EQUIPMENT PRODUCTION
 Current Dollar Growth Rates Converted at Constant Exchange Rates



SOURCE: International Forecasts from Electronic Outlook Corp

REGIONAL GROWTH RATES						GLOBAL PC AND CELLULAR HANDSET MARKETS					
CATEGORY	2007	2008	2009	2010	2011	CATEGORY	2007	2008	2009	2010	2011
WORLD	8.1	0.2	-11.9	4.6	8.3	PC UNITS, MILLION	271	300	274	292	323
UNITED STATES	0.9	-0.2	-10.6	3.5	4.5	PC GROWTH RATES	14.7	10.8	-8.7	6.5	10.5
WEST EUROPE	-0.1	-1.1	-16.1	1.5	4.0	CELLPHONE UNITS, M	1145	1210	1095	1174	1304
JAPAN	0.2	-9.7	-14.3	2.2	5.5	CELLPHONE GROWTH	15.1	5.7	-9.5	7.2	11.1
FOUR TIGERS	7.6	1.3	-11.3	4.9	8.6						
CHINA	21.2	3.1	-7.3	7.9	13.3						

GLOBAL PERSONAL COMPUTER SHIPMENTS IN UNITS



GLOBAL CELLULAR HANDSET SHIPMENTS IN UNITS

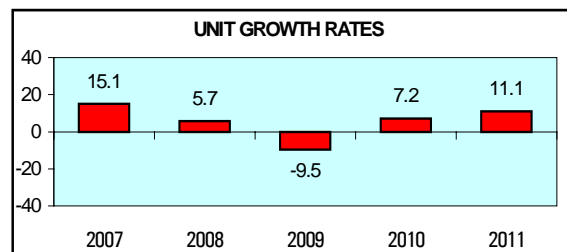
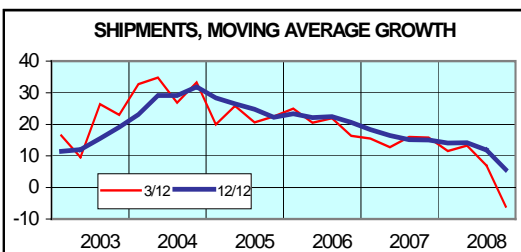
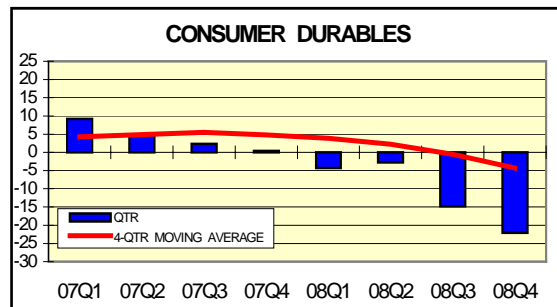
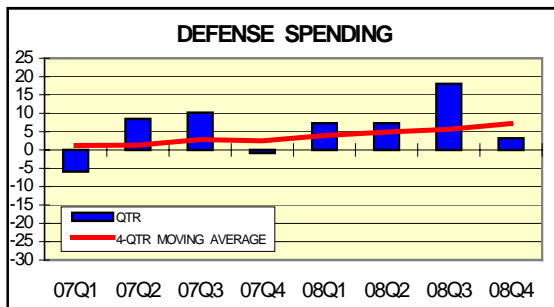
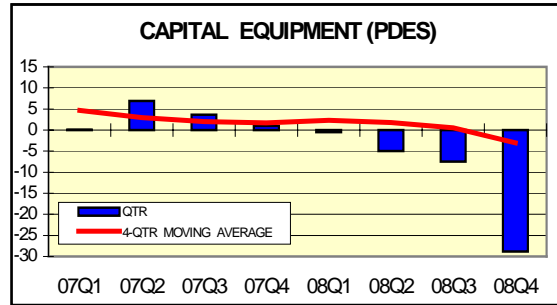
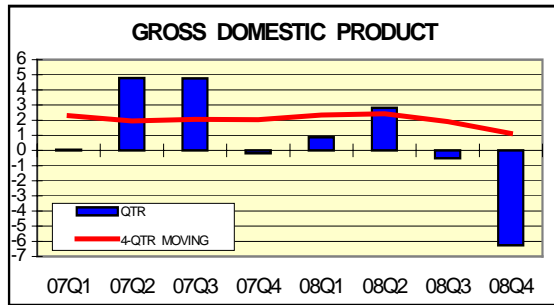


FIGURE 3: US ECONOMIC OVERVIEW
Constant Dollar Growth Rates



CATEGORY	07Q1	07Q2	07Q3	07Q4	08Q1	08Q2	08Q3	08Q4	2007	2008	2009	2010	2011
GDP	0.0	4.8	4.8	-0.2	0.9	2.8	-0.5	-6.2	2.0	1.1	-2.7	2.3	3.6
CAPITAL EQUIPMENT	0.0	6.9	3.6	1.0	-0.5	-5.0	-7.5	-28.8	1.7	-3.0	-13.6	7.0	12.6
DEFENSE	-5.9	8.4	10.1	-0.9	7.2	7.3	18.0	3.2	2.5	7.1	4.7	1.5	-2.8
CONSUMER DURABLES	9.2	5.0	2.3	0.4	-4.3	-2.8	-14.8	-22.1	4.8	-4.3	-6.0	6.2	6.8
EXPORTS	0.6	8.8	23.0	4.4	5.1	12.3	3.0	-23.6	8.4	6.2	-10.3	0.1	6.3

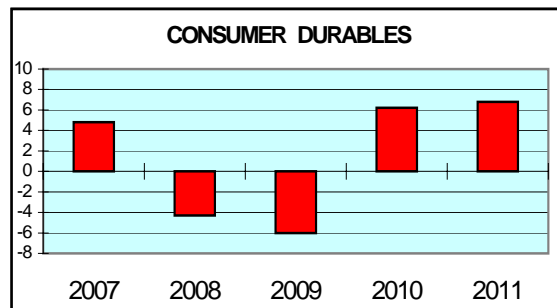
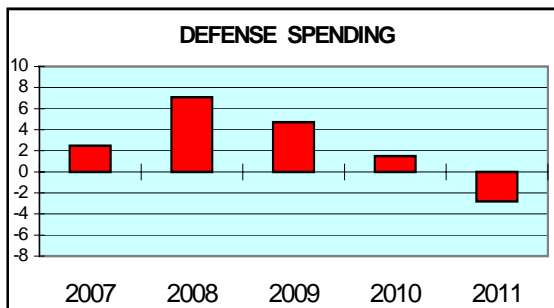
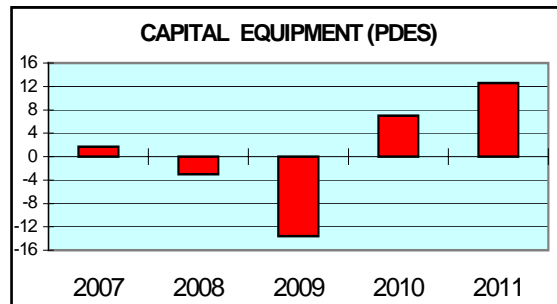
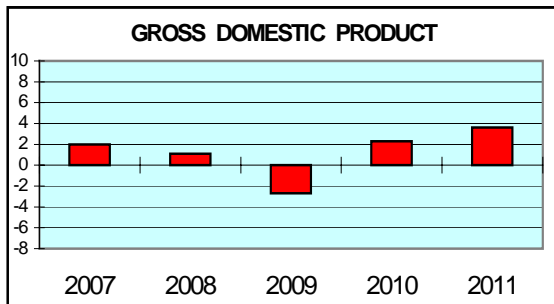
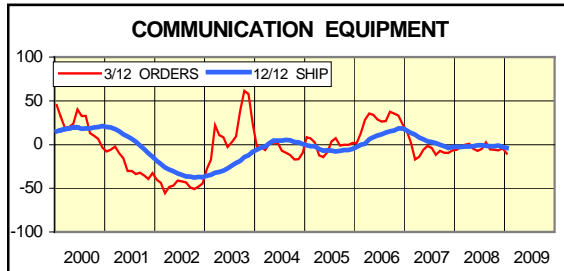
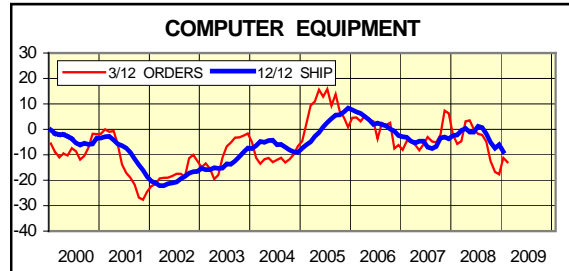


FIGURE 4: US ELECTRONIC EQUIPMENT
Current Dollar Growth Rates



ORDERS & SHIPMENTS	UNIT	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
TOTAL EQUIPMENT	3/12	0.1	4.6	2.6	2.6	2.5	1.4	1.4	-4.0	-5.1	-4.3	-2.8	-4.8
COMPUTER	3/12	-4.7	3.1	3.5	0.0	-1.7	-2.2	-4.9	-12.4	-16.7	-17.7	-11.2	-12.9
COMMUNICATIONS	3/12	-2.4	-0.1	0.7	-4.9	-7.4	-5.0	2.6	-5.5	-5.9	-6.5	-4.3	-10.4
INDUSTRIAL & INSTRUMENT	3/12	8.4	5.7	3.8	3.1	8.1	9.5	10.7	7.0	3.3	4.1	6.6	3.6
MILITARY ELECTRONICS	3/12	-2.4	17.8	4.6	22.3	15.4	1.7	-8.0	-10.6	-2.7	4.3	-5.2	0.8
TOTAL EQUIPMENT	12/12	1.1	1.4	1.8	1.9	2.1	3.0	3.0	2.6	1.8	1.4	1.4	-0.2
COMPUTER	12/12	-2.2	-0.5	0.3	-1.1	-1.1	1.2	0.7	-1.7	-5.1	-7.4	-6.1	-8.7
COMMUNICATIONS	12/12	-2.8	-2.2	-2.2	-1.8	-0.7	-0.8	-1.4	-2.0	-1.7	-1.2	-2.9	-3.9
INDUSTRIAL & INSTRUMENT	12/12	6.8	6.3	6.7	7.3	6.9	7.8	8.8	9.1	8.5	8.1	8.6	6.6
MILITARY ELECTRONICS	12/12	1.1	1.1	1.8	2.9	4.1	4.5	4.6	5.6	7.3	8.4	7.7	7.6

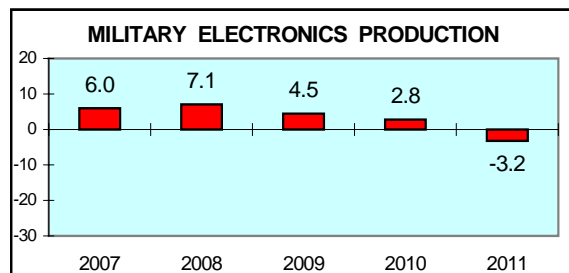
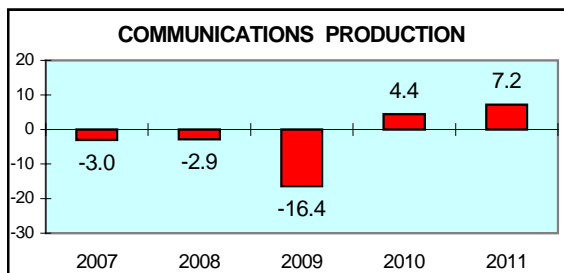
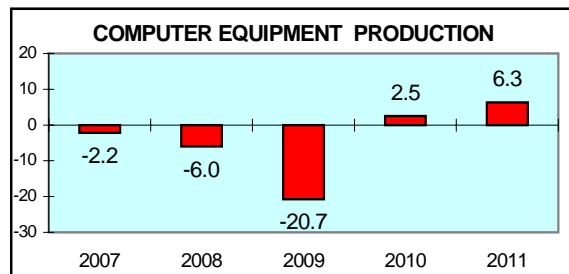
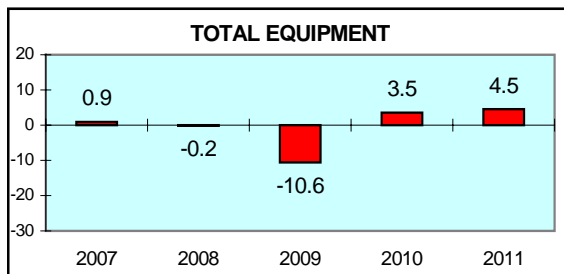
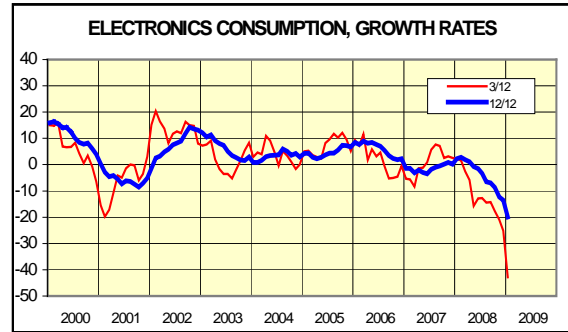
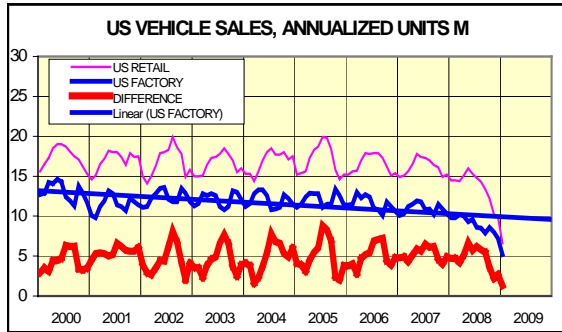


FIGURE 5: US AUTOMOTIVE INDUSTRY



	AUG	SEP	OCT	NOV	DEC	JAN
RETAIL	14.3	13.4	12.2	10.2	9.9	6.6
FACTORY	8.5	7.9	8.6	8.0	7.2	5.2
DIFFERENCE	5.8	5.5	3.6	2.2	2.7	1.4

	AUG	SEP	OCT	NOV	DEC	JAN
3/12	-14.5	-14.3	-17.7	-20.9	-25.1	-42.8
12/12	-6.5	-7.0	-8.7	-12.3	-13.6	-19.9

FIGURE 6: US ELECTRONICS INDUSTRY INVENTORY BY PRODUCTION STAGE
Days of Sales, 3-Month Moving Averages



	AUG	SEP	OCT	NOV	DEC	JAN
TOTAL INVEN.	43.8	44.4	45.6	46.5	47.2	48.2

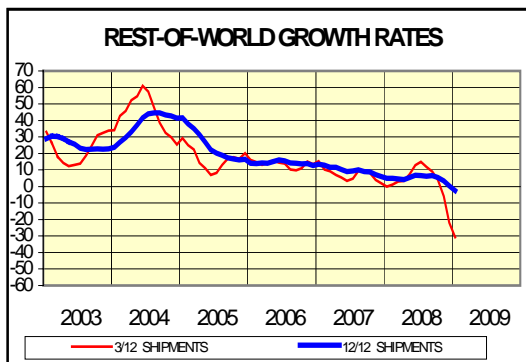
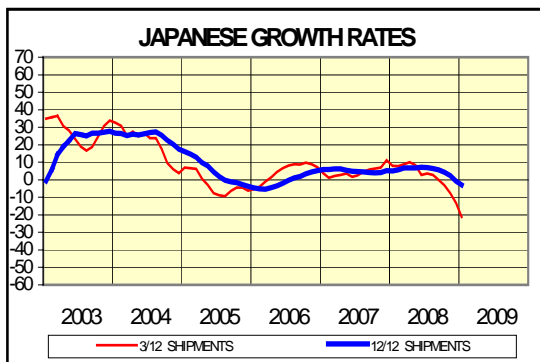
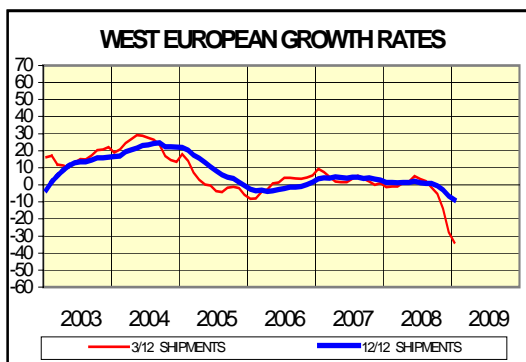
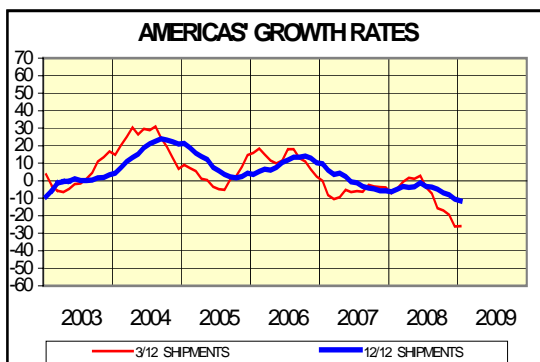
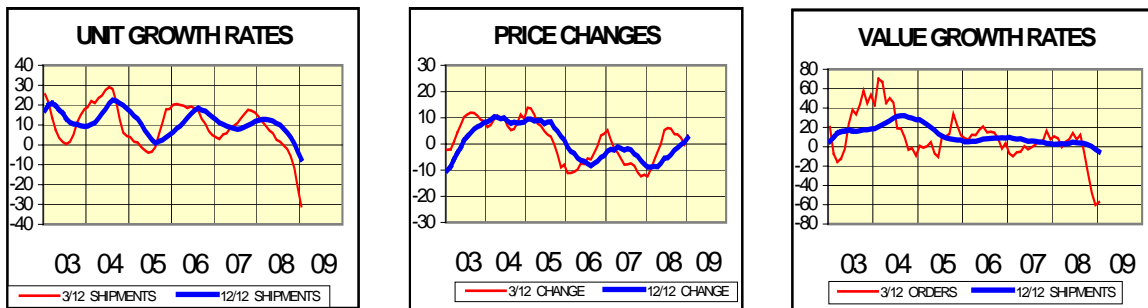
	AUG	SEP	OCT	NOV	DEC	JAN
RAW INVEN.	14.6	14.7	15.1	15.3	15.3	15.6



	AUG	SEP	OCT	NOV	DEC	JAN
WIP INVEN.	19.8	20.0	20.6	21.2	21.7	22.3

	AUG	SEP	OCT	NOV	DEC	JAN
FINISH INVEN.	9.5	9.6	9.9	10.0	10.2	10.4

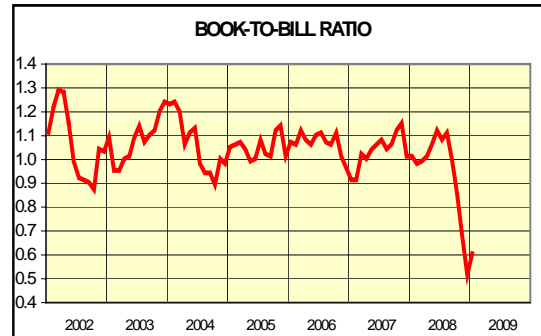
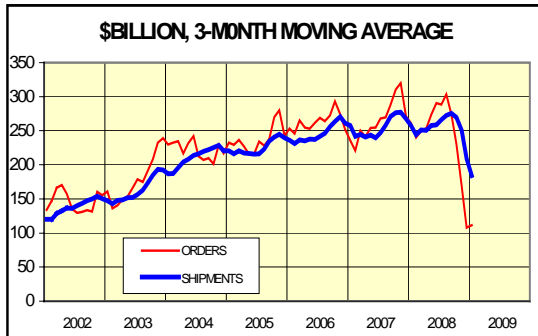
FIGURE 7: WORLD MERCHANT SEMICONDUCTOR MARKET



MARKET STATISTICS FOR THE MONTH OF JANUARY 2009

REGION	3-MONTH MOVING ANNUALIZED VALUES					3/12 GROWTH RATES				12/12 GROWTH RATES			
	SHIP UNITS	SHIP PRICE	SHIP VALUE	ORDER VALUE	BOOK/ BILL	SHIP UNITS	SHIP PRICE	SHIP VALUE	ORDER VALUE	SHIP UNITS	SHIP PRICE	SHIP VALUE	ORDER VALUE
	B	\$	\$B	\$B	-	%	%	%	%	%	%	%	%
AMERICAS	32.9	0.933	30.6	NA	NA	1.2	-26.7	-25.9	NA	-6.1	-5.8	-11.6	NA
WEST EUROPE	54.5	0.501	27.3	NA	NA	-26.4	-10.1	-33.9	NA	-6.7	-2.2	-8.8	NA
JAPAN	79.0	0.491	38.8	NA	NA	-18.3	-3.4	-21.1	NA	-5.7	3.0	-2.9	NA
REST OF WORLD	238.3	0.366	87.2	NA	NA	-34.8	6.3	-30.7	NA	-6.8	4.7	-2.4	NA
TOTAL	404.6	0.455	184.0	111.4	0.61	-30.8	3.1	-28.6	-57.3	-7.2	2.3	-5.0	-13.0

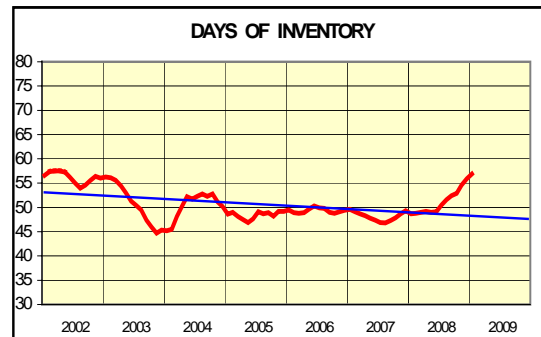
FIGURE 8: GLOBAL SEMICONDUCTOR INDUSTRY



	AUG	SEP	OCT	NOV	DEC	JAN
ORDERS, \$B	303	274	231	169	108	111
SHIPMENT, \$B	273	276	270	250	209	184

	AUG	SEP	OCT	NOV	DEC	JAN
BOOK-TO-BILL	1.11	0.99	0.85	0.68	0.52	0.61

FIGURE 9: US PASSIVE AND OTHER COMPONENTS



	AUG	SEP	OCT	NOV	DEC	JAN
3/12 ORDERS	-4.2	-6.0	-8.0	-11.8	-15.7	-17.4
12/12 SHIP	-2.2	-2.5	-2.8	-3.8	-4.6	-6.1

	AUG	SEP	OCT	NOV	DEC	JAN
INVENTORY	51.6	52.4	52.9	54.6	55.9	56.9

FIGURE 10: US MERCHANT COMPONENT PURCHASES GROWTH

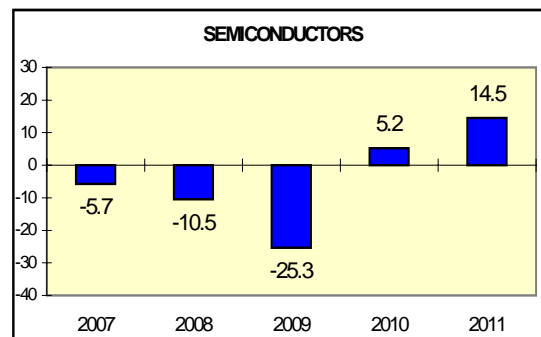
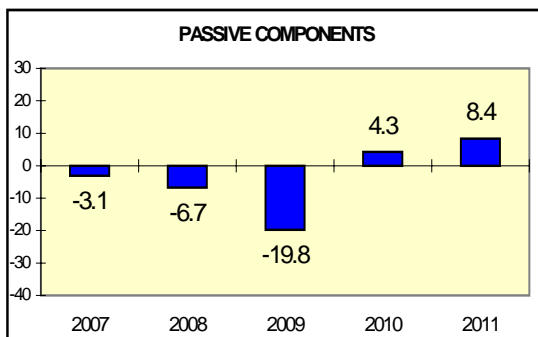


TABLE 1
US PRODUCTION OF ELECTRONIC EQUIPMENT

EQUIPMENT CATEGORY	Current \$Million				Growth Rates in Percent			
	2008	2009	2010	2011	2008	2009	2010	2011
COMMUNICATIONS	44,056	36,850	38,470	41,223	-2.9	-16.4	4.4	7.2
COMPUTER & OFFICE	98,997	79,461	81,443	86,391	-6.1	-19.7	2.5	6.1
INDUSTRIAL & INSTRUMENT	126,787	113,525	118,989	129,399	4.0	-10.5	4.8	8.7
SUBTOTAL COMMERCIAL	269,839	229,836	238,902	257,013	-1.1	-14.8	3.9	7.6
MILITARY	90,351	94,422	97,050	93,982	7.1	4.5	2.8	-3.2
CONSUMER	9,583	7,776	7,629	7,872	-7.0	-18.9	-1.9	3.2
AUTOMOTIVE	10,138	7,665	8,033	8,603	-22.7	-24.4	4.8	7.1
TOTAL	379,912	339,698	351,613	367,469	-0.2	-10.6	3.5	4.5

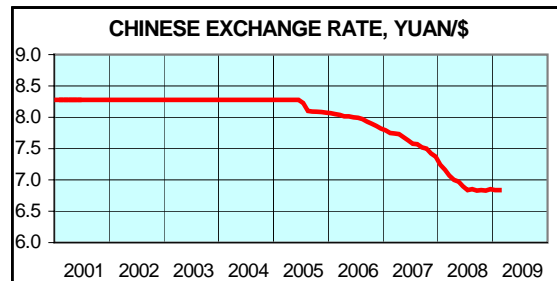
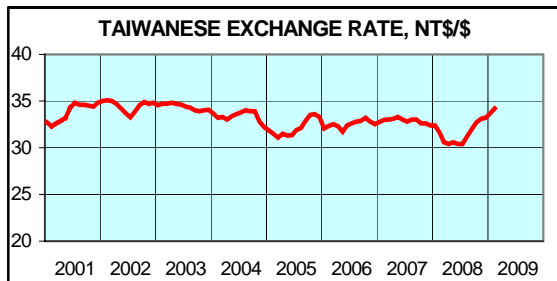
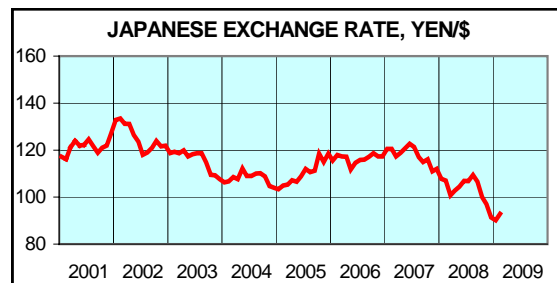
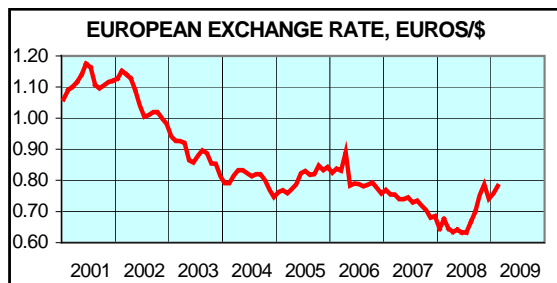
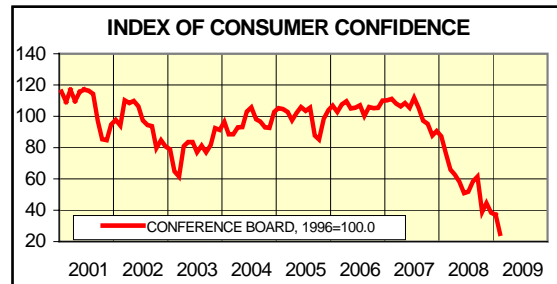
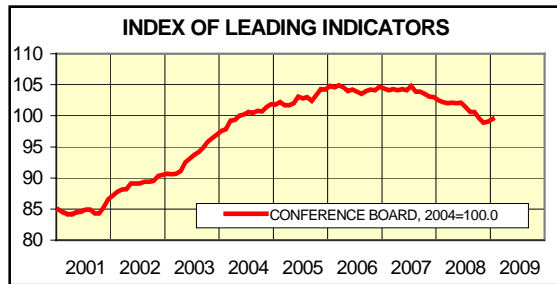
TABLE 2
MERCHANT SEMICONDUCTOR MARKETS
Values Converted at Fluctuating Exchange Rates

REGION	Current \$Billion				Growth Rates in Percent			
	2008	2009	2010	2011	2008	2009	2010	2011
AMERICAS	37.9	28.3	29.8	34.1	-10.5	-25.3	5.2	14.5
W. EUROPE	38.2	27.5	28.1	31.3	-6.6	-28.0	2.1	11.2
JAPAN	48.5	35.1	36.2	40.6	-0.7	-27.5	2.9	12.2
ROW	124.0	99.8	113.7	142.3	0.4	-19.5	14.0	25.1
TOTAL	248.6	190.8	207.8	248.2	-2.8	-23.3	8.9	19.4

TABLE 3
MERCHANT SEMICONDUCTOR MARKETS
Values Converted at Fluctuating Exchange Rates

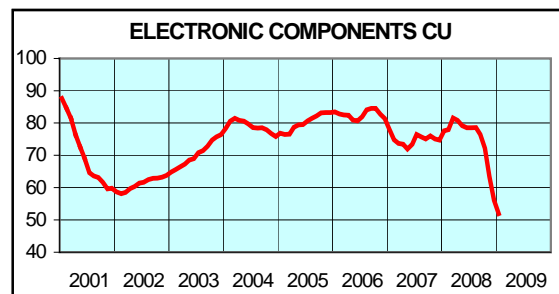
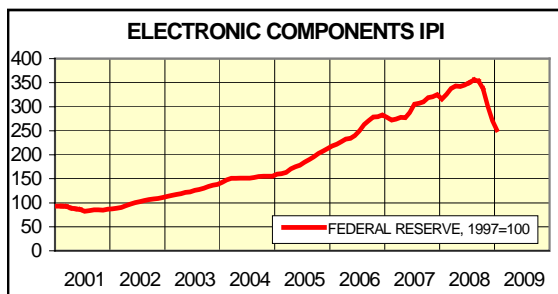
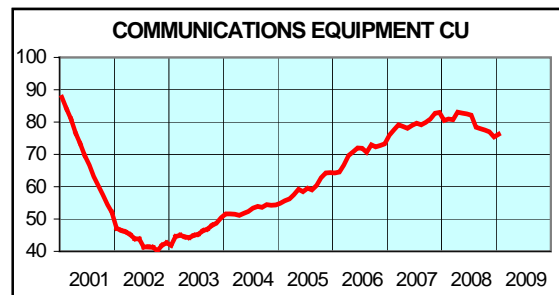
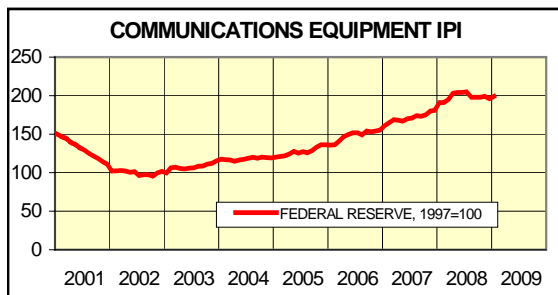
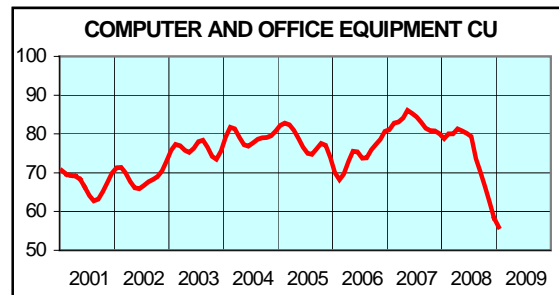
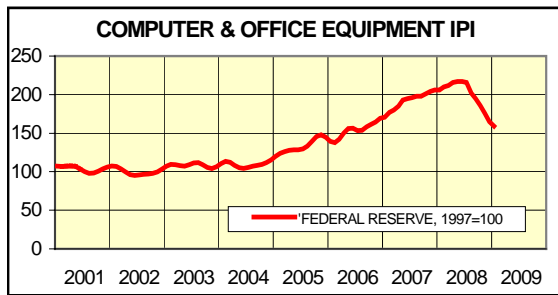
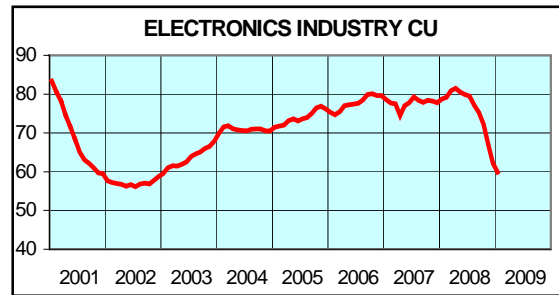
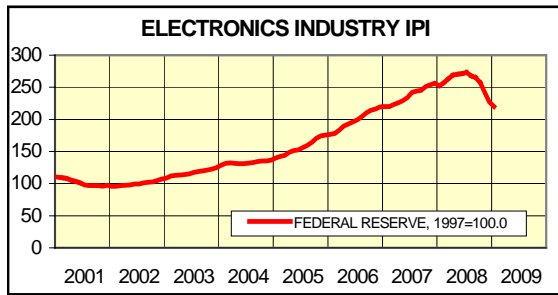
COMPONENT CATEGORY	Current \$Billion				Growth Rates in Percent			
	2008	2009	2010	2011	2008	2009	2010	2011
DISCRETE SEMICONDUCTORS	39.9	32.7	34.2	39.7	5.6	-18.0	4.6	16.1
INTEGRATED CIRCUITS	208.7	158.0	173.6	208.5	-4.2	-24.3	9.8	20.1
MOS MEMORY	46.3	31.9	36.5	47.5	-19.9	-31.1	14.2	30.4
MICROPRODUCTS	53.1	41.1	43.5	49.6	-5.5	-22.6	5.8	13.9
LOGIC CIRCUITS	73.5	57.1	63.2	75.5	9.3	-22.3	10.8	19.4
LINEAR ICs	35.6	27.9	30.3	35.9	-2.2	-21.8	8.9	18.2
TOTAL SEMICONDUCTORS	248.6	190.8	207.8	248.2	-2.8	-23.3	8.9	19.4

**FIGURE 11
ECONOMIC INDICATORS**



CATEGORY	UNIT	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
LEADING INDEX	-	102.0	102.1	102.0	102.1	101.4	100.6	100.6	99.6	98.9	99.1	99.5	NA
CONSUMER CONFIDENCE	-	65.9	62.8	58.1	51.0	51.9	58.5	61.4	38.8	44.7	38.6	37.0	25.0
P&S EXECUTIVE INDEX	-	49.0	48.6	49.3	49.5	49.5	49.3	43.4	38.7	36.6	32.9	35.6	35.8
NASDAQ CLOSE	-	2,279	2,413	2,523	2,293	2,326	2,368	2,092	1,721	1,536	1,577	1,476	1,378
EUROPEAN EXCHANGE	euro/\$	0.65	0.63	0.64	0.63	0.63	0.67	0.70	0.75	0.79	0.74	0.76	0.78
JAPANESE EXCHANGE	Yen/\$	101	103	104	107	107	109	107	100	97	91	90	93
TAIWANESE EXCHANGE	NT\$/ \$	30.6	30.4	30.6	30.4	30.4	31.2	32.0	32.7	33.1	33.2	33.7	34.2
CHINESE EXCHANGE	Yuan/\$	7.07	7.00	6.97	6.90	6.84	6.85	6.83	6.84	6.83	6.85	6.84	6.84
S. KOREAN EXCHANGE	WON/\$	982	987	1,034	1,031	1,015	1,046	1,134	1,329	1,399	1,362	1,354	1,441

FIGURE 12: INDUSTRIAL PRODUCTION INDICIES (IPI) AND CAPACITY UTILIZATION (CU)



CATEGORY	UNIT	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
INDUSTRY IPI	-	257	263	269	270	271	273	268	265	257	242	227	220
COMPUTER & OFFICE IPI	-	210	212	216	217	217	216	202	195	186	176	165	159
COMMUNICATIONS IPI	-	191	195	203	204	204	205	198	198	198	199	196	199
COMPONENTS IPI	-	326	338	343	342	345	350	356	353	338	301	271	252
INDUSTRY CU	%	79.2	80.9	81.5	80.5	79.9	79.5	77.2	75.3	72.2	67.0	62.2	59.9
COMPUTER & OFFICE CU	%	80.0	80.0	81.3	80.8	80.2	79.3	73.6	70.3	66.5	62.6	58.3	56.0
COMMUNICATIONS CU	%	80.9	80.7	83.1	82.8	82.5	82.1	78.4	78.0	77.5	76.9	75.4	76.2
COMPONENTS CU	%	78.0	81.6	80.8	79.2	78.5	78.5	78.6	76.5	72.2	63.4	56.1	51.9

TABLE 4
SUMMARY FORECAST
Annual Growth Rates

CATEGORY	2007	2008	2009	2010	2011
GLOBAL GDP					
TOTAL	3.9	1.7	-1.1	2.5	3.8
UNITED STATES	2.0	1.1	-2.7	2.3	3.6
EU	2.9	0.5	-2.4	0.5	1.7
JAPAN	2.4	-0.2	-3.8	1.0	2.8
FOUR TIGERS	5.3	2.7	-4.8	4.1	5.1
CHINA	11.6	9.0	5.8	7.5	8.8
GLOBAL EQUIPMENT PRODUCTION					
TOTAL	8.1	0.2	-11.9	4.6	8.3
UNITED STATES	0.9	-0.2	-10.6	3.5	4.5
W. EUROPE	-0.1	-1.1	-16.1	1.5	4.0
JAPAN	0.2	-9.7	-14.3	2.2	5.5
FOUR TIGERS	7.6	1.3	-11.3	4.9	8.6
CHINA	21.2	3.1	-7.3	7.9	13.3
US ECONOMY					
GRAND TOTAL,REAL GDP 2000 \$	2.0	1.1	-2.7	2.3	3.6
NONRESIDENTIAL EQUIP & SOFT	1.7	-3.0	-13.6	7.0	12.6
FEDERAL DEFENSE	2.5	7.1	4.7	1.5	-2.8
DURABLES	4.8	-4.3	-6.0	6.2	6.8
EXPORTS	8.4	6.2	-10.3	0.1	6.3
US EQUIPMENT PRODUCTION					
TOTAL	0.9	-0.2	-10.6	3.5	4.5
COMMUNICATIONS	-3.0	-2.9	-16.4	4.4	7.2
COMPUTER & OFFICE	-1.0	-6.1	-19.7	2.5	6.1
INDUSTRIAL & INSTRUMENT	4.5	4.0	-10.5	4.8	8.7
SUBTOTAL	1.0	-1.1	-14.8	3.9	7.6
MILITARY	6.0	7.1	4.5	2.8	-3.2
CONSUMER	-19.0	-7.0	-18.9	-1.9	3.2
AUTOMOTIVE	-11.2	-22.7	-24.4	4.8	7.1
US COMPONENT PURCHASES					
US PASSIVE PURCHASES	-3.1	-6.7	-19.8	4.3	8.4
SEMICONDUCTORS	-5.7	-10.5	-25.3	5.2	14.5
GLOBAL SEMICONDUCTOR PURCHASES					
TOTAL	3.2	-2.8	-23.3	8.9	19.4
AMERICAS	-5.7	-10.5	-25.3	5.2	14.5
W. EUROPE	2.7	-6.6	-28.0	2.1	11.2
JAPAN	5.2	-0.7	-27.5	2.9	12.2
ROW	6.0	0.4	-19.5	14.0	25.1

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October	Communication Equipment Forecast
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