➤ BY JOSEPH L. HAZELTON, SENIOR EDITOR

Downshifted. And **Tomorrow?**

As expected, U.S. economic growth slowed in 2007, which raises questions: Has the bottom of the slowdown been reached, and how long will the slowdown last?

This year, U.S. economic growth took its third and largest step down in recent years. The economy grew 3.6 percent in '04, which was followed by 3.1 in '05 and 2.9 in '06.

So far, the economy is on track to finish '07 with a growth rate of 2.2 percent. The rate is the slowest since 2002, but it was expected. Industrial economist Tom Runiewicz predicted a rate of 2.2 percent for '07 in CUTTING TOOL ENGINEERING's December '06 issue.

However, Runiewicz of Global Insight Inc.'s Eddystone, Pa., office, expects economic growth to stay at 2.2 percent in '08 and expects it to extend into '09.

U.S. cutting tool sales.

Year	Total billings (billions of $)
2000	1.889
2001	1.647
2002	1.476
2003	1.393
2004	1.592
2005	1.616
2006	1.719
2007*	1.209

* Through August 2007 (8 months) Source: USCTI

U.S. Manufacturing

Like the U.S. economy, U.S. manufacturing continues to grow in '07, but at a slower rate than in recent years. As measured by gross domestic product, the manufacturing industry grew 3 percent in '04, 4 percent in '05 and 5 percent in '06, but it's expected to grow only about 2.1 percent in '07.

Despite slower growth, U.S. manufacturers remain busy. Patrick W. McGibbon, vice president–strategic information and research for AMT—The Association For Manufacturing Technology, cited data that the industry is making products as fast as it can, running at a little more than 80 percent of capacity. "It's tough to do more than 80 percent," he said, adding that factors such as materials supply, maintenance work and employee absences keep companies from coming closer to their theoretical maximum capacity.

Other signs of sustained activity include orders for manufacturing technology and cutting tools. Both sets of orders are up from last year.

According to AMT data, year-to-date orders for U.S. machinery are up about 6 percent compared with the same period for '06. McGibbon predicted that U.S. manufacturing may not soften until the second half of '08.

Manufacturing technology consumption.

Year	Total order value (billions of $)	Metalcutting machines (Units)	Metalforming machines (Units)
2000	4.02	24,188	2,920
2001	2.67	17,464	1,619
2002	2.16	14,626	1,695
2003	1.98	13,152	1,323
2004	2.84	18,434	1,184
2005	3.07	19,540	1,110
2006	3.94	24,027	1,188
2007*	2.61	15,279	840

* Through August 2007 (8 months)
Source: AMT–The Association For Manufacturing Technology and American Machine Tool Distributors' Association

Overall, though, AMT President John B. Byrd III predicted that orders would increase by about 6 percent in 2008. "The consensus is it'll flatten out in 2009," he said, "but we don't see a tremendous downturn."

Likewise, U.S. orders for cutting tools are higher this year. "We're having a slightly up year from '06 in the first half," said Charles Stockinger, secretary/treasurer for the United States Cutting Tool Institute. Incoming orders were up 4 percent in the first quarter and up 5 percent in the second compared with those quarters last year. "We're probably going to finish this year with a modest improvement over '06 of 3 to 4 percent."

"I think the cutting tool business is strong," Stockinger said, "but it's a creature of our manufacturing economy." Runiewicz added that the manufacturing, cutting tool and machine tool industries move together, but not in lockstep, so growth in one may be stronger than in the others.

Housing's Effect

Runiewicz said the slower growth in U.S. manufacturing was due to the housing market's decline, a slowdown in consumer spending and a slowdown in investment in machinery and other business equipment, such as computers.

Runiewicz focused on the housing decline, particularly its extent. "Much stronger than we originally thought," he said. "It'll be much longer than we thought." He added that the housing market's real investment in residential structures is expected to decline 17 percent for '07, and he predicted a further decline of 22 percent in '08.

The housing market's decline includes reduced investment in existing homes via improvements and additions as well as reduced investment in building new homes. The decline affects the manufacturing industry because construction companies tend to buy fewer full-size pickup trucks, tools and other equipment. "There isn't as much work for them this year, so they're not as likely to buy a new truck this year," said John Wolkonowicz, senior automotive analyst for North America, Global Insight, Lexington, Mass.

According to Wolkonowicz, reduced sales of full-size pickup trucks considerably affects the Big Three automakers. He said that vehicle category is one of the automakers' most profitable segments on a per unit basis. "It yields a large portion of their profitability."

Also, consumers buy few new appliances during a housing downturn. "There's almost a guaranteed set of manufacturing that goes with a housing start," McGibbon said. The set includes autos and appliances, such as refrigerators, dishwashers, washing machines and dryers. McGibbon said the connection between a newly built house and a new set of manufactured goods wasn't as strong as it used to be, but "there's still a relationship there."

Another problem in the housing market is the "credit crunch" stemming from consumers defaulting on their subprime mortgages. A housing-related credit crunch tends to reduce consumer spending on durable goods.

The reduced consumer spending can extend to cars, too. When the housing market was strong, many people refinanced their homes or took out home equity loans and used the money to buy autos. "Now that's gone, especially with declining home prices," Runiewicz said.

However, the decline in construction appears to be restricted. "Nonresidential construction is still growing, believe it or not," Runiewicz said. Office buildings and stores continue to be built. Business construction is on track to expand 10 percent in '07. This continues a relatively good trend in which business construction expanded 8.5 percent in '03, 10 percent in '04 and 6.5 percent in '05.

However, Byrd said reduced revenue from the housing decline may be offset by increased exports. A weak U.S. dollar benefits companies that export to other countries by making U.S. goods cheaper in overseas markets.

But a weak U.S. dollar has negative effects, too. "It's more expensive to bring in imports," Runiewicz said. "It fuels inflation." Also, one of the affected imports is oil. "Whenever you see a weakening dollar, you tend to see higher oil prices," Runiewicz said.

McGibbon added that U.S. exports would be attractive to foreign consumers until March. He said by then, other countries may adjust their monetary policies so the U.S. dollar returns to a stronger position relative to their own currencies.

Aerospace Industry

Although growing more slowly, the U.S. economy—and U.S. manufacturing—is benefiting from several strong industries. One of the most prominent is aircraft manufacturing.

"It's a great upturn," said Richard Aboulafia, vice president–analysis for the aerospace research firm Teal Group Corp., Fairfax, Va.

During this year, the aerospace industry has continued to benefit from a rare coincidence; the markets for civilian and military aircraft are both up at the same time.

Aboulafia said the only catches are aircraft manufacturers' need to keep up with demand and the possibility of a downturn. Keeping up with demand is a concern because of the large backlog of orders. For example, Aboulafia cited the 6,000-plus commercial passenger jets that have been ordered but not yet delivered worldwide. On Sept. 30, The Boeing Co.'s part of the backlog was 3,019. Another part of keeping up is obtaining enough supplies for manufacturing the aircraft. Aboulafia said the industry is doing so well that

Boeing

supply can't keep up with demand for some items, such as titanium sponge, the raw material for titanium castings.

As for a downturn, that possibility depends on events in the wider world. For example, if U.S. armed forces withdraw from Iraq, their demand for aircraft would decrease. Another example is reduced demand for air travel, which would result from a global economic downturn or a terrorist incident like the attacks on Sept. 11, 2001.

Decreased demand would lead many airlines to reduce or cancel their airplane orders. According to Aboulafia, though, if a downturn occurred, its effect on those orders wouldn't be felt by the aerospace industry for at least 12 to 18 months. Likewise, even if fighting in Iraq stopped tomorrow, Aboulafia said U.S. armed forces would still need years to replace their damaged or destroyed aircraft, especially their attack and transport helicopters. Thus, even with a downturn, the aerospace industry would be busy manufacturing aircraft for some time.

And without a downturn?

"We don't have a peak till 2011," Aboulafia said. "If you're talking about manufacturing, you're not talking about this year or next, you're talking about 2010 and beyond." He explained that aerospace manufacturers' order backlog is sufficient to keep them busy for that time period.

Medical Devices

Another industry that's doing well is medical technology. In '06, the U.S. industry shipped products with a total value of $123 billion, according to a report from the Advanced Medical Technology Association. "The medical industry is a booming industry, with technology being driven more by materials than innovative equipme nt," said Stuart C. Salmon, president of manufacturing consultancy Advanced Manufacturing Science and Technology, Rossford, Ohio. A fellow in the Society of Manufacturing Engineers, Salmon holds a doctorate in mechanical engineering and has consulted on the machining, particularly the grinding, of medical devices.

As well as the industry is doing today, Salmon expects it to face a materials challenge in coming years. "For many years, the medical industry has manufactured parts in 400 series stainless steels, which are somewhat difficult to machine over the more common carbon steels used in, say, the automotive industry," he said. However, he predicted the materials for some implants, including heart valves and joints, to shift toward ceramics.


Johnson Matthey Medical Products

"Ceramics means grinding with diamond grinding wheels," Salmon said.

Parts manufacturers can expect that type of grinding to be more difficult than the grinding of metals. "Ceramics are a totally different animal, requiring exceptionally high stiffness and yet not-always-high spindle power," Salmon said. "The swarf generated when grinding ceramics is more of a sludge than the typical metallic swarf, so filtration of the grinding fluid is an added challenge."

Consequently, to stay competitive, many medical parts manufacturers will have to overcome the challenge of grinding ceramics through modified or new machine tools.

Auto Industry

Not surprisingly, the U.S. auto industry hasn't been doing well in '07. "This year is going to come in lower than it has in the last few years," said Global Insight's Wolkonowicz. "It will come in lower than in 2006." However, he predicted an improvement in '08.

But the U.S. auto industry will benefit the die and mold industry, which would provide new tooling for the many new vehicles that will be launched, so '09 and '10 should be good years for the die and mold industry, according to Erich J. Merkle, chief economist and forecasting director for automotive consultancy IRN Inc., Grand Rapids, Mich., who spoke Sept. 25 at Makino Inc.'s 2007 Die Mold Expo, Auburn Hills, Mich.

Although the auto industry is down, some automakers are doing better than others. "Toyota has been going great guns," Wolkonowicz said, adding that the carmaker has sometimes had double-digit monthly sales increases compared with '06. "Honda had a less good year but better than the domestics."

As for the domestic automakers, Chrysler LLC largely maintained its market share, while General Motors Corp. and Ford Motor Co. lost market share.

"They're just not competitive with the transplants," Byrd said about the Big Three automakers.

GM should become more competitive under its new labor agreement with the United Auto Workers union. "It will help their profitability," Wolkonowicz said about the agreement, which was ratified Oct. 10.

Likewise, Chrysler should become more competitive under its UAW agreement, which was ratified Oct. 27. In a press release, Tom LaSorda, Chrysler's vice chairman and president, described the agreement as "a framework to improve our long-term manufacturing competitiveness."

Under both agreements, Chrysler and GM will no longer be responsible for their retirees' health care benefits. Instead, the benefits will be paid via trusts called voluntary employee beneficiary associations (VEBAs).

According to a UAW newsletter, Chrysler will pay $1.5 billion to cover benefits through Jan. 1, 2010; will contribute $7.1 billion to fund an independent VEBA, which will pay the benefits after that date; and will pay up to $487 million more in the future if the VEBA lacks the money to pay benefits at their current levels.


GM

In the newsletter, the UAW said the funding would pay benefits at specified levels for current and future retirees and that the trust will be solvent regardless of Chrysler's financial condition.

GM agreed to contribute 70 percent of the money needed for its retirees' VEBA to cover an estimated $50 billion in benefits. According to Wolkonowicz, the GM money should handle all costs for the next 80 years. He added that the VEBA increases retirees' financial security; if GM goes out of business, retirees' wouldn't lose their health care benefits.

Both agreements also allow Chrysler and GM to further restrain rising costs by letting them establish lower wages for many new employees. According to the UAW newsletter, the affected employees at Chrysler would be new entry-level workers in noncore operations. The newsletter added that noncore operations will be defined by a joint committee of union and company representatives. At GM, the lower-paid employees will be in non-manufacturing jobs, such as material movement.

The cost-restraining efforts will move GM about 80 percent closer to cost parity with "new domestic" automakers, such as Honda and Toyota, Wolkonowicz said. "It significantly improves GM's business model," he added. Moreover, with greater cost-parity, the automaker should sell more cars, requiring it to hire more UAW employees.

The UAW and Ford Motor Co. reached a tentative agreement Nov. 3 on a new labor contract. The agreement's details weren't released by either organization, except for Ford's saying the contract would establish an independent health care trust for retirees. However, Ford CEO Alan Mulally told The Associated Press in October that his company could accept "the basic framework" of the UAW agreements with Chrysler and GM, according to New York news company Bloomberg LP.

The next step is for Ford's UAW members to vote on the agreement.

Wolkonowicz predicted the auto industry would improve. "The outlook for '08 is better," he said.

'08 Forecast

And the general outlook for '08?

"More of the same," Runiewicz said. He added that the U.S. economy would probably be weaker at the start of '08 and stronger toward the beginning of '09. He cited the housing decline and its impact on consumer spending as the main factors that would keep economic growth at a subdued rate. Consumer spending's impact can be extensive given its share of GDP. In '06, consumer spending amounted to 71 percent of GDP.

Runiewicz also said next year's initial weakness would be due to the impact of the subprime mortgage credit problem, an impact that would decline as the year progressed and the problem diminished. With the economy finishing stronger, though, Runciewicz predicted that '08 would have a growth rate of 2.2 percent, which would extend into '09.

USCTI's Stockinger expects a slight uptick for the cutting tool industry. He predicted the industry to be somewhat restrained in '08, growing 5 to 6 percent, because congressional and presidential elections create uncertainty in the business community, including the manufacturing industry. However, he anticipated some expansion after the elections.

"I'd probably make book on a slight increase, hoping for a big increase," he said about the cutting tool industry in '08. "But for '09, I see strength."

Stockinger's expectation for the cutting tool industry may be a good sign for overall manufacturing. △