

Replicating your life savings

THE new hot sector for technology investors is in the rapidly growing 3D printer business. 3D printing is the process of mak-



Finance

By Don Freeman

There are several rapid prototyping techniques and companies using this technology, but they all use the basic five step process.

- 1) Create a CAD model of the design; 2) Convert the CAD model to STL format; 3) Slice the STL file into thin cross-sectional layers; 4) Construct the model one layer atop another; 5) Clean and finish the model

Stratasys Ltd. (SSYS)

Stratasys Ltd is the company that Scott Crump created in building the toy frog for his daughter. It now has a US\$2.81 billion market cap and is currently trading at \$73.25 per share. The company has a forward P/E (price/earnings ratio) of 29.42, which is quite cheap for a company in such a fast-growing sector. Of the seven analysts that follow the stock, one has it rated a "Strong Buy", two a "Buy" and four a "Hold". The 52-week range on the stock is \$33.52 to \$92.30. The stock has had an impressive run this year,

up 200% in past 12 months. I would hold off on purchasing at current levels and wait for a market correction to buy in at a lower price.

Dassault Systemes SA (DASTY)
Dassault Systemes is the largest company in the sector with a market cap of \$14.32bn. The stock is currently trading at \$115.77, just shy of its 52-week high of \$117.90. Dassault is in the strongest position of the companies with 3D printing technology. The company has a forward P/E of 20.90 with a strong return on equity of 15.18% and operating margins of 24.70%. The company is sitting on \$1.71bn in cash. I do like the stock, but it has had a good run off its 52-week low of \$84.17. I advise investors to wait for a pullback, just like with Stratasys.

My first introduction to 3D printing came in 1997, working as a mechanical engineer, while printing out of plastic the first prosthetic limb for a below-the-knee amputee. The purpose was to manufacture a cost-effective prosthetic limb from a digital scan of the patient's remaining leg. At the time it was cutting edge technology but new advances have come a long way since 1997. Last month, surgeons for the first time used 3D printing to completely replace damaged bone in a patient needing a skull replacement. 75% of the patient's skull was successfully replaced with 3D-printed material. The uses of this technology are endless.

Imagine if you had a glue gun with a mixture of polyethylene and candle wax and wanted to make a toy frog for your daughter. The only way you could really do it is by building the object layer by layer. That is what 3D printing is and this is exactly what happened to S Scott Crump in Minnesota. Scott did make that toy frog for his daughter and started the company Stratasys to automate the 3D printing process.

The Process

The process begins with taking virtual blueprints from CAD and "slicing" them into digital cross-sections for the machine to use as a guideline for printing. Material is then layered until a 3D model has been "printed". These layers of material are fused together to create the final shape. What this allows for is to create an object of any shape or geometric feature. This is known as rapid prototyping.



3D printed skulls.



IT LOOKS SO REAL: 3D printing isn't that different from Star Trek's replicator. Inset: A man runs using a prosthetic leg after having an amputation below the knee Photos: 3ders.org

has a market cap of \$393 million.

ExOne's 3D printer is unique in that the customer can print in the material that they desire. Their competitors require that the customer print in plastic. Currently Ford, Boeing and Caterpillar are using ExOne's printers. The company has a backlog of orders for their printers and I look for growth to continue.

Even though the stock is much higher than its recent IPO price of \$18, this is one my favorite stocks in the sector. It has the lowest market cap compared to the other companies in the 3D printer business and I think it has the most room for growth and upside potential. ExOne is focusing solely on large industrial users with significant resources rather than consumers. The company will grow revenues not only from new orders for machines, but from servicing the printers and selling parts. ExOne currently is deriving 2/3 of its revenues from its services business.

Overall Assessment

Rapid prototyping technology has revolutionized the way parts are engineered and

designed. Don't expect to find 3D printers on the shelf at Power Buy in Phuket this week, however, the 3D printer is finally coming to the consumer level. 3D Systems (NYSE: DDD) has a home-based printer for a starting price of US\$1,299. But this printer can only print an object the size of a basketball and can only print in one color. Companies and universities are now the main users of 3D printing but remember the first personal computer began in the same way before hitting the consumer level. The 3D printing business has major potential for growth. The sector is volatile and is not for the risk adverse but for long-term investors, the sector holds tremendous potential.

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The last time the markets were here

Island Investor

By David Mayes

I RECENTLY read a report that had a comparative list of statistics from the last time the stock markets were up at these levels, which was just before the crash at the start of the financial crisis. Early this march, the DOW reached a previous high level of 14164.5 and then surpassed that level. I thought it might be helpful to share this info, as it really does get you thinking about what is actually behind the market right now. These statistics deal with America but I think if you looked at the UK it would not be a very different picture. If you looked at Europe it could be even scarier.

For instance GDP growth was 2.5% as opposed to 1.6% in the US the last time the DOW was at these levels. There were about half the total number of unemployed, and the

number of Americans living on food stamps has jumped from about 27 million to 47 million. This doesn't seem like the kind of environment a stock market rally would thrive in, but then again maybe it is all about future expectations.

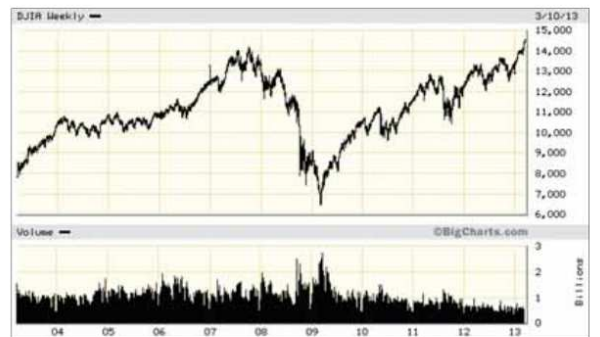
The US debt as a portion of GDP was 38%, now it has grown to 74%. The balance sheet of the Fed has grown from just under 1 trillion to over 3 trillion USD. Unless getting further into debt is practical common financial advice, it doesn't appear the current policy decisions are going to lead to much except inevitable inflation from all of that printing. The credit rating of the USA was AAA last time markets were here, now only AA+.

While all of these in my opinion are reasons to be very wary of the markets at these levels, there is one indicator that I noticed which could mean this rally still has some legs. Consumer confidence was 99.5% back then, whereas it is only at

69.6% now. This is a contrarian indicator as the market tops usually coincide with tops in confidence.

Another interesting statistic is that a ten year government bond yielded 4.64% before the last crash and today it only yields 1.89%. This could be a big part of the reason why markets are rising, as investors are searching for alternatives to such low yields. Unfortunately my big fear is that they will all get stung with money that most likely belongs in the lower risk assets. It is a damned if you, damned if you don't kind of situation for many. This is especially true if you live in Thailand and have seen the triple whammy effects of low yields, a strengthening Thai Baht and high local inflation.

One method of attempting to mitigate the risk of the current market without completely sitting on the sidelines is to counterbalance any stock market holdings with asset classes which performed



A chart of the Dow Jones Industrial Average, a selection of key stocks on the New York Stock Exchange, in both points and trade volume over 10 years.

positively during the last crashes. CTAs did extremely well, and there other alternatives as well. I would be very careful about being over exposed on the downside of the stock market given the ugly pictures the economic numbers still paint. Thanks to David Conway from Juniper for compiling these

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